TIBCO ActiveMatrix® BPM

Installation and Configuration

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Preface

This software may be available on multiple operating systems. However, not all operating system platforms for a specific software version are released at the same time. Please see the readme file for the availability of this software version on a specific operating system platform.

TIBCO ActiveMatrix BPM is TIBCO's next-generation business process management platform. This guide provides the information needed to install and configure the product.

Topics

- Changes from the Previous Release of this Guide, page viii
- Typographical Conventions, page ix
- Connecting with TIBCO Resources, page xii

Changes from the Previous Release of this Guide

This section itemizes the major changes from the previous release of this guide.

Sizing Configuration for TIBCO ActiveMatrix BPM

You can now set the initial system sizing values when configuring your TIBCO ActiveMatrix BPM Server in TIBCO Configuration Tool (TCT). See Chapter 5, Creating and Configuring Runtime Objects, on page 92 for details.

Certified and Compatible Software

The installation guide provides a list of the certified and compatible combinations of operating systems and databases, and browsers.

Universal Installer to Uninstall Products

The location of the Universal Installer to uninstall products has been moved to ***installation_environment*\tools\universal_installer**. To uninstall the product, run **TIBCOUniversalInstaller.exe** available at this location. See Chapter 12, Uninstalling TIBCO ActiveMatrix BPM, on page 193 for details.

Typographical Conventions

The following typographical conventions are used in this manual.

Table 1 General Typographical Conventions

Convention	Use
ENV_NAME *TIBCO_HOME* *BPM_HOME*	TIBCO products are installed into an installation environment. A product installed into an installation environment does not access components in other installation environments. Incompatible products and multiple instances of the same product must be installed into different installation environments. An installation environment consists of the following properties: • **Name** Identifies the installation environment. This name is referenced in documentation as *ENV_NAME*. On Microsoft Windows, the name is appended to the name of Windows services created by the installer and is a component of the path to the product shortcut in the Windows Start > All Programs menu. • **Path** The folder into which the product is installed. This folder is referenced in documentation as *TIBCO_HOME*. TIBCO ActiveMatrix BPM installs into a directory within a *TIBCO_HOME*. This directory is referenced in documentation as *BPM_HOME*. The default value of *BPM_HOME* depends on the operating system. For example on Windows systems, the default value is `C:\Program Files (x86)\tibco\amx-bpm\1.3`
CONFIG_HOME	The directory that stores the TIBCO ActiveMatrix BPM configuration information, such as property and log files. The value of *CONFIG_HOME* depends on the operating system. For example, on Windows systems, the default value is `C:\ProgramData\amx-bpm\tibco\data.`
`code font`	Code font identifies commands, code examples, filenames, pathnames, and output displayed in a command window. For example: Use `MyCommand` to start the foo process.

Table 1 General Typographical Conventions (Cont'd)

Convention	Use
`bold code font`	Bold code font is used in the following ways: • In procedures, to indicate what a user types. For example: Type **`admin`**. • In large code samples, to indicate the parts of the sample that are of particular interest. • In command syntax, to indicate the default parameter for a command. For example, if no parameter is specified, `MyCommand` is enabled: `MyCommand [enable | disable]`
italic font	Italic font is used in the following ways: • To indicate a document title. For example: See *TIBCO ActiveMatrix BusinessWorks Concepts*. • To introduce new terms For example: A portal page may contain several portlets. *Portlets* are mini-applications that run in a portal. • To indicate a variable in a command or code syntax that you must replace. For example: `MyCommand` *PathName*
Key combinations	Key name separated by a plus sign indicate keys pressed simultaneously. For example: Ctrl+C. Key names separated by a comma and space indicate keys pressed one after the other. For example: Esc, Ctrl+Q.
	The note icon indicates information that is of special interest or importance, for example, an additional action required only in certain circumstances.
	The tip icon indicates an idea that could be useful, for example, a way to apply the information provided in the current section to achieve a specific result.
	The warning icon indicates the potential for a damaging situation, for example, data loss or corruption if certain steps are taken or not taken.

Table 2 Syntax Typographical Conventions

Convention	Use
`[ ]`	An optional item in a command or code syntax. For example: `MyCommand [optional_parameter] required_parameter`
`|`	A logical `OR` that separates multiple items of which only one may be chosen. For example, you can select only one of the following parameters: `MyCommand para1 | param2 | param3`

`{ }`	A logical group of items in a command. Other syntax notations may appear within each logical group.
	For example, the following command requires two parameters, which can be either the pair `param1` and `param2`, or the pair `param3` and `param4`.
	`MyCommand {param1 param2} | {param3 param4}`
	In the next example, the command requires two parameters. The first parameter can be either `param1` or `param2` and the second can be either `param3` or `param4`:
	`MyCommand {param1 | param2} {param3 | param4}`
	In the next example, the command can accept either two or three parameters. The first parameter must be `param1`. You can optionally include `param2` as the second parameter. And the last parameter is either `param3` or `param4`.
	`MyCommand param1 [param2] {param3 | param4}`

Connecting with TIBCO Resources

How to Join TIBCOmmunity

TIBCOmmunity is an online destination for TIBCO customers, partners, and resident experts. It is a place to share and access the collective experience of the TIBCO community. TIBCOmmunity offers forums, blogs, and access to a variety of resources. To register, go to http://www.tibcommunity.com.

How to Access TIBCO Documentation

You can access TIBCO documentation here:

http://docs.tibco.com

How to Contact TIBCO Support

For comments or problems with this manual or the software it addresses, contact TIBCO Support as follows:

- For an overview of TIBCO Support, and information about getting started with TIBCO Support, visit this site:

  http://www.tibco.com/services/support

- If you already have a valid maintenance or support contract, visit this site:

  https://support.tibco.com

  Entry to this site requires a user name and password. If you do not have a user name, you can request one.

PART ONE INTRODUCTION

Chapter 1 Introduction

This chapter explains installation modes, requirements, and other options you should be aware of before starting the installation.

Topics

- Installation Overview, page 3
- Installation Requirements, page 7

Installation Overview

The installation and configuration of the product involves the following steps:

1. Complete the pre-installation tasks which includes fulfilling the hardware and software requirements, and setting up and configuring all the required third party software.
2. Install TIBCO ActiveMatrix BPM. Depending on the architecture, the installation process may involve repeating the basic installation on different machines in one of the installation modes.
3. Configure the product using TIBCO Configuration Tool (TCT). Depending on the architecture, you may need to configure the installation on more than one machine.
4. Perform the post-installation tasks.

Before performing the pre-installation or the actual installation process, you must:

- determine the architecture for your system based on your requirements. For example, you can choose to have a highly available, fault tolerant (HA-FT) system, a distributed system, or a basic system.
- decide the approach for the installation process - GUI, console, or silent installation.

The above factors decide the tasks that need to be performed to install and configure a BPM system to suit your requirements.

Installation Modes

Three installation modes are available: GUI, console, and silent.

GUI Mode

In the GUI mode, the installer presents panels that allow you to make choices about product selection, product location, and so on. To invoke the installer in GUI mode, double-click the executable.

In the GUI mode only, the TIBCO Configuration Tool runs after the installer completes if the checkbox **Launch TIBCO Configuration Tool** on the Summary screen is not unchecked. See Running the TIBCO Configuration Tool for details.

Console Mode

Console mode allows you to run the installer from the command prompt or terminal window. This is useful if your machine does not have a GUI environment.

Silent Mode

Silent mode installs the product using either default or custom settings that are saved in a response file and does not prompt for inputs.

Installation Types

Two installation types are available: Profile or Custom.

- The Profile installation type installs all the software for a specific profile. The following table lists the available profiles and the components that they install

Table 3: Installation Profiles

Installation Profile	Description
Install BPM, Administrator & TIBCO Host	Installs complete TIBCO ActiveMatrix BPM software on your machine.
Install Administrator & TIBCO Host	Installs TIBCO ActiveMatrix Administrator server and TIBCO Host software only.
Install TIBCO Host Only	Installs TIBCO Host software only.

- The **Custom** installation type allows you to select components. The following table lists the available components:

Feature	Description
BPM	Installs complete TIBCO ActiveMatrix BPM software.
Administration Environment	TIBCO ActiveMatrix Administrator server is the utility used to create, configure, monitor, and manage objects in TIBCO ActiveMatrix BPM at runtime. See *TIBCO ActiveMatrix Administration* for more information.

Feature	Description
TIBCO Host	TIBCO Host is the runtime object that serves as the point of contact between TIBCO ActiveMatrix BPM nodes and Administrator server. TIBCO Host has a staging area that contains product and custom features available to the nodes it manages. It performs operations such as software distribution, node creation, node life cycling, and application deployment.
TIBCO ActiveMatrix BPM Documentation	Installs the TIBCO ActiveMatrix BPM documentation in *TIBCO_HOME***amx-bpm***version***doc**\ where *version* is the release version of the product.

Installer Account

Microsoft Windows

You must have administrator privileges for the machine on which this product is installed. If you do not have administrator privileges, the installer exits. You must then log out of the system and log in as a user with the required privileges, or request your system administrator to assign the privileges to your account.

If you intend to install the product on a network drive, ensure that the account used for installation has permission to access the network drive.

UNIX

Any type of user—regular (non-root) user and super-user (root)—can install this product. While installing this product on UNIX platforms, ensure that the same installer account is used to install all TIBCO ActiveMatrix products.

A graphic environment such as CDE or X Windows is required to run the installer in GUI mode.

Installer Log File

The installer log file, `tibco_universal_installer.`*username*`_install.log`, is written to the `.TIBCO/install_`*timestamp* folder of the user's home directory. To change the location of the installer log file, specify the option `-V logFile="`*myLogFile*`"` when you run the installer.

The installer log file captures the following information:

- Installation environment details such as user that invoked the installer, operating system details, installer mode, host name, JAVA_HOME and the Java version available in that environment, and so on.
- List of assemblies installed.
- Information related to the Ant scripts that are executed by the installer is logged in separate log files `antTask_log_`*`scriptname_timestamp`* under the folder `install_`*`timestamp`*.

Installation Directory

TIBCO recommends that you install TIBCO ActiveMatrix BPM into a new, empty installation environment (separate from other TIBCO products).

To do this, install TIBCO ActiveMatrix BPM as described in Installing the Product on page 46. Specify a new, empty directory as the environment location or create a new, empty installation environment.

Installation Requirements

This section describes the disk space requirements, system memory requirements, software requirements, and certified and compatible versions of operating systems and databases for this product.

Disk Space Requirement

Before installing this product, extract the contents of the installation archive to a temporary directory. The installer files consume up to 600 MB of disk space.

Temporary Disk Space Required by the Installer

The installer requires at least 600 MB of free space in the temporary directory. On Microsoft Windows, the temporary directory typically is:

```
%SystemDrive%:\Documents and Settings\user_name\Local
Settings\Temp.
```

If your system does not have sufficient disk space in the default temporary area, you can run the installer with a different temporary directory by using the following option when starting the installer:

```
-is:tempdir /new_temp
```

where `/new_temp` has sufficient free disk space.

Disk Space After Installation

The installer calculates the disk space required in the installation environment directory for the selected components. The calculation is done before the actual installation (copying of files to the system) begins. The installer will proceed only if sufficient free disk space is available in the installation environment directory.

However, if disk space is consumed by another process while the installer is copying the files, and if the required disk space is thereby reduced, the installer may fail and display a failure message.

While performing installation, avoid running other processes that consume disk space in the installation environment directory.

This product can consume up to 5 GB of free space under TIBCO_HOME.

Hardware Requirements

TIBCO recommends the following minimum server machine specification for all platforms:

- Two 3GHz dual processors.
- 8 GB of virtual memory available for user applications
- 5 GB of free space on the local drive where you are installing TIBCO ActiveMatrix BPM.

Supported Platforms

Refer to the product readme file for the supported operating system platforms and versions and required patches.

Certified and Compatible Combinations

This section describes and lists the *certified* and *compatible* combinations of operating systems and databases for TIBCO ActiveMatrix BPM.

Certified versions are a defined set of operating systems and database combinations that have been extensively tested and validated by TIBCO. Typically, every release of TIBCO ActiveMatrix BPM is certified against the most common combinations being used by customers. In the process, specific versions of LDAP servers, browsers, and other third party software are also certified.

See Certified Versions for a list of certified operating systems and database combinations for the current release.

Compatible versions are the set of operating systems, databases, and other third party software that:

- have been certified by TIBCO in one of the earlier releases, or
- are claimed to be compatible by the vendor.

In the event of a problem with a compatible software version, TIBCO will employ best efforts to provide support on that software version. However, TIBCO may request that you reproduce the problem on a certified version of the software. This may mean that you potentially downgrade to an older software version (or upgrade to a newer version) that does not exhibit the issue; ideally only on a temporary basis.

See Compatible Versions for the list of compatible operating systems and databases.

This document lists the operating systems and databases with standard support from the vendors. If you are using an operating system or a database with an extended support, contact TIBCO Support (How to Contact TIBCO Support) to know if the version is compatible with TIBCO ActiveMatrix BPM.

Certified Versions

The following table lists the certified operating systems and database combinations:

Platform	Microsoft SQL Server (x64)			Oracle 11g			DB2 WorkGroup Edition	
	2008	2008 R2	2008 R2 SP1	R2 EE	R2 SE	RAC	9.7.3	9.7.4
Microsoft Windows								
Windows Server 2008 x64 64bit	No	Yes	Yes	Yes	Yes	Yes	No	No
Windows Server 2008 R2 x64 64bit	No	No	No	No	No	No	Yes	No
Windows Server 2008 R2 x64 64bit SP1	Yes	No	No	No	No	No	Yes	Yes
Linux								
Red Hat Enterprise Linux Server v5.5 x64 (64 Bit)	No	No	No	Yes	No	No	No	No
Red Hat Enterprise Linux Server v5.7 x64 (64 Bit)	Yes	No	No	No	No	Yes	No	No
SUSE Enterprise Linux Server 11 x86 64bit SP1	No	Yes	No	No	Yes	No	No	No
UNIX								
Solaris 10 SPARC 64bit	No	No	No	Yes	No	No	No	No
Solaris 10 x86 64bit	No	No	No	Yes	No	No	No	No
IBM Power Systems AIX v6.1 64bit	No	No	No	Yes	No	No	No	Yes

Compatible Versions

Vendors follow different numbering conventions for releasing patches, and major or minor releases. See the vendor documentation for details about the release numbering conventions for their products.

Compatibility with higher versions is indicated by appending a plus sign '+' to the minimum compatible version of the operating system or database. The footnotes at the end of the table describe how to assess the degree of compatibility for an operating system or database supplied by a specific vendor.

A change in the major version of the operating system or database mandates a complete validation to be done by TIBCO. Contact TIBCO Support to know if a major version of an operating system or database released recently is certified or compatible.

Platform	Microsoft SQL Server		Oracle 11g			DB2 Workgroup Edition	
	2008 (x64)+ [1]	2008 R2 (x64)+	Enterprise Edition R2 11.2.0.2+ [2]	Standard Edition R2 11.2.0.2+	RAC 11.2.0.2+	9.7.3+ [3]	9.7.4+
Microsoft Windows							
Windows Server 2008 x86 (64 Bit)+	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Windows Server 2008 R2 x64 (64bit)+	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Linux							
Red Hat Enterprise Linux Server v5.5+ [4] x64 (64 Bit)	No	No	Yes	Yes	Yes	Yes	Yes
SUSE Enterprise Linux Server 11+ [5] x64 (64 Bit)	No	No	Yes	Yes	Yes	Yes	Yes
SUSE Enterprise Linux Server 11 x86 64 Bit SP1+	No	Yes	Yes	Yes	Yes	Yes	Yes
UNIX							
SPARC Solaris 10 (64 bit)+ [6]	No	No	Yes	Yes	No	No	No
Solaris 10 x86 (64 bit)+	No	No	Yes	Yes	Yes	No	No

Platform	Microsoft SQL Server		Oracle 11g			DB2 Workgroup Edition	
	2008 (x64)+[1]	2008 R2 (x64)+	Enterprise Edition R2 11.2.0.2+[2]	Standard Edition R2 11.2.0.2+	RAC 11.2.0.2+	9.7.3+[3]	9.7.4+
IBM Power Systems AIX v6.1 (64bit)+[7]	No	No	Yes	Yes	Yes	Yes	Yes

1. **Microsoft** releases service packs periodically, indicated by an alpha-numeric version number 'SP*N*'. These often include previously released updates, security and performance improvements, and support for new types of hardware. TIBCO ActiveMatrix BPM is compatible with higher versions of service packs for a major release version. You can install the latest service pack to keep Windows up to date.
2. **Oracle** releases patch sets, indicated by a change in the fourth digit, for example 11.2.0.*N*. TIBCO ActiveMatrix BPM is compatible with higher versions of patch sets for a major release version.
3. **IBM** releases fix packs for **DB2**, indicated by an alpha-numeric version number 'Fix Pack *N*'. TIBCO ActiveMatrix BPM is compatible with higher versions of fix packs for a major release version.
4. **Red Hat** releases service packs, indicated by a change in the second digit. For example, 5.*N*. TIBCO ActiveMatrix BPM is compatible with higher versions of service packs for a major release version.
5. **SUSE** releases service packs, indicated by an alpha-numeric version number 'SP*N*'. TIBCO ActiveMatrix BPM is compatible with higher versions of service packs for a major release version.
6. **Oracle** releases patches for **Sun Solaris**, indicated by the last two digits in the version number, for example 108921-*NN*. TIBCO ActiveMatrix BPM is compatible with higher versions of patches for a major release version.
7. **IBM** releases fix packs for **AIX**, indicated by an alpha-numeric version numbers 'FP*N*'. TIBCO ActiveMatrix BPM is compatible with higher versions of fix packs for a major release version.

Certified and Compatible Browsers

Certified Browsers

The following table lists the certified browsers for different components:

Table 4 Certified Browsers

Component	Internet Explorer 7 (only With Google Chrome Frame Plug-in)	Firefox 7	Chrome 14 (Google Chrome Frame Plug-in v14)
Form Renderer	No	Yes	Yes

Table 4 Certified Browsers

Component	Internet Explorer 7 (only With Google Chrome Frame Plug-in)	Firefox 7	Chrome 14 (Google Chrome Frame Plug-in v14)
Openspace			
GWT Gadgets	No	Yes	Yes
GI Gadgets	Yes	Yes	Yes
Spotfire	No	No	No
Mobile GWT Gadgets	No	No	No
Workspace[1]			
GWT Form	Yes	Yes	Yes
GI Form	Yes	Yes	Yes
TIBCO ActiveMatrix Administrator			
Administrator	No	No	No

1. Workspace is certified with Google Chrome Frame plug-in version 14.

Compatible Browsers

Browser versions are updated frequently and often without any compatibility issues. Unless specified otherwise, you can use a more recent version of a browser as long as the vendor claims the recent version to be compatible.

In the event of a problem with a compatible browser version, TIBCO will employ best efforts to provide support on that browser version. However, TIBCO may request that you reproduce the problem on a certified version of the browser. This may mean that you potentially downgrade to an older version (or upgrade to a newer version) that does not exhibit the issue; ideally only on a temporary basis.

Table 5 Compatible Browsers

Component	Internet Explorer			Mozilla Firefox			Safari		Google Chrome	
	7+ GCF* [1]	8	9+	3.5	3.6	7+	5	iPhone OS 4	9	14+
Form Renderer	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Openspace										
GWT Gadgets	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
GI Gadgets	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	Yes
Spotfire	No	Yes	No	No	No	No	No	No	No	No
Mobile GWT Gadgets	No	No	No	No	No	No	No	Yes	No	No
Workspace										
GWT Form	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	Yes
GI Form	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	Yes
TIBCO ActiveMatrix Administrator										
Administrator	No	Yes	No	Yes	Yes	No	No	No	No	Yes

1. Internet Explorer 7 is compatible with Openspace and Workspace components only when a certified or compatible version of Google Chrome Frame Plug-in is installed.

Software Requirements

TIBCO Software

TIBCO ActiveMatrix BPM software includes the following required and optional software components. See the readme file for the supported versions.

TIBCO Enterprise Message Service

Required. TIBCO Enterprise Message Service is used as the notification and

messaging backbone for TIBCO ActiveMatrix BPM. TIBCO ActiveMatrix BPM is not necessarily installed on the machine on which TIBCO Enterprise Message Service is installed. This software is distributed and installed separately from TIBCO ActiveMatrix BPM software.

TIBCO Enterprise Message Service can also used by the TIBCO ActiveMatrix SOAP and JMS binding types. The TIBCO ActiveMatrix BPM license does not cover this usage of the included TIBCO Enterprise Message Service software. You must separately license TIBCO Enterprise Message Service for this usage.

TIBCO ActiveMatrix Runtime UDDI Server

Optional. TIBCO ActiveMatrix Runtime UDDI Server is a lightweight UDDI registry for discovering and registering services during service execution. This software is distributed and installed separately from TIBCO ActiveMatrix BPM software.

TIBCO ActiveMatrix Binding Type for Adapters

Optional. This software is distributed and installed separately from TIBCO ActiveMatrix BPM software.

TIBCO ActiveMatrix Binding Type for EJB

Optional. This software is distributed and installed separately from TIBCO ActiveMatrix BPM software.

TIBCO ActiveMatrix Implementation Type for C++

Optional. This software is distributed and installed separately from TIBCO ActiveMatrix BPM software.

Third-party Software

See the readme file for the supported versions.

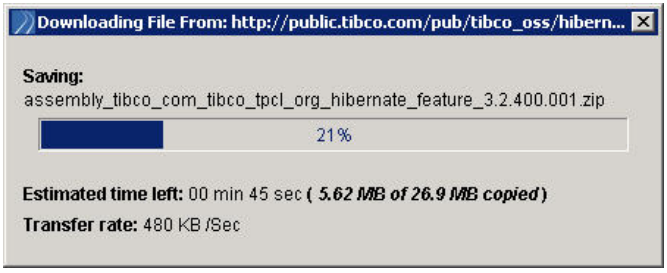
Hibernate

Required. When installing TIBCO ActiveMatrix BPM, you can choose to either:

- Let the installer download Hibernate automatically if you have Internet access, or
- Specify the directory where Hibernate has been previously downloaded from the TIBCO download site.

If your installation machine is not connected to the Internet, you must download the assembly containing Hibernate and save it to the `assemblies` subdirectory of the temporary directory where your installer archive is extracted (the preferred option to streamline installation) or to another temporary directory accessible to the installation machine. On the TIBCO download site, click **TIB_assembly_tibco_com_tibco_tpcl_org_hibernate_feature_3.2.4.001_all html** and download `assembly_tibco_com_tibco_tpcl_org_hibernate_feature_3.2.400.001.zip`.

When downloading Hibernate from the TIBCO site, the number in the package name refers to the assembly number and not the version of Hibernate. This can be misleading as the assembly number is not the same as the Hibernate version number. For example, the package name when downloading Hibernate Version **3.2.7** was assembly_tibco_com_tpcl_ord_hibernate_feature_**3.2.400.001**.zip.


Downloading File From: http://public.tibco.com/pub/tibco_oss/hibern...
Saving:
assembly_tibco_com_tibco_tpcl_org_hibernate_feature_3.2.400.001.zip
21%
Estimated time left: 00 min 45 sec (5.62 MB of 26.9 MB copied)
Transfer rate: 480 KB /Sec

Eclipse LGPL Software Assemblies

Required on Linux and Solaris platforms. You can choose to either:

- Let the TIBCO Universal Installer download Eclipse LPGL assemblies automatically during installation.
- Specify the directory where the Eclipse LGPL assemblies have been previously downloaded from the TIBCO site.

  If your installation machine is not connected to the Internet, you must download the following assemblies containing required Eclipse LPGL assemblies and save them to the `assemblies` subdirectory of the temporary directory where your installer archive is extracted (the preferred option to streamline installation) or to another temporary directory accessible to the installation machine. On the TIBCO download site, click **TIB_product_tibco_eclipse_lgpl_3.5.2.001_*OSplatform*.html** on the download site and download `product_tibco_eclipse_lgpl_3.5.2.001_`*OSplatform*`.zip`, where *OSplatform*

is one of linux24gl23_x86, linux24gl23_x86_64, sol10_x86, sol10_x86_64, linux26gl24_s390x, sol9_sparc_64, sol9_sparc.

Java Virtual Machine

Required. JDK 1.6.0_24 (64 bit) is packaged with TIBCO ActiveMatrix BPM as a convenience.

DBMS Software

Required. The database stores TIBCO ActiveMatrix Administration information.

For development purposes, the following DBMS software is supported:

- **HSQLDB 1.8.1** TIBCO ActiveMatrix BPM includes an embedded version of HSQLDB 1.8.1.

For production purposes, you can use the following DBMS software:

- **Oracle 11g R2 Standard, Enterprise Editions or Oracle 11g RAC**
- **Microsoft SQL Server 2008 or 2008 R2**: When installing the SQL server, select the Security Mode for your instance of the server as **Mixed Mode Authentication**.
- **DB2 Workgroup Edition 9.7.3 or 9.7.4**

See Certified and Compatible Combinations for certified an compatible versions of databases.

See Setting up the Databases for additional configurations that need to be performed on the database being used.

JDBC Drivers

Required. JDBC drivers are used by:

- TIBCO ActiveMatrix BPM to access the database,
- TIBCO ActiveMatrix Administrator to access the TIBCO ActiveMatrix database, and
- Services to access JDBC resources.

TIBCO ActiveMatrix HSQLDB, Microsoft SQL Server, and Oracle drivers as provided by the DBMS vendors for their respective database management systems.

Before beginning with the installation, ensure that you have a valid JDBC driver for the database type you plan to use as you need to supply the location of the JDBC driver during the installation.

You must package the Microsoft SQL and Oracle JDBC drivers into TIBCO ActiveMatrix Administrator before creating an ActiveMatrix Administrator server.

Web Browsers

Required. A web browser is required to run TIBCO ActiveMatrix Administrator GUI and the TIBCO ActiveMatrix BPM clients - TIBCO Workspace and TIBCO Openspace. See Certified and Compatible Browsers for details

Safari 5 can be used at runtime to access the Workspace client application, or other custom application created with TIBCO Workspace components (known as *WCC* components). However, Safari is not supported by TIBCO General Interface Builder, therefore it cannot be used at design-time to create applications with WCC components.

Apache Ant

Required. It is required to run TIBCO Configuration Tool and TIBCO ActiveMatrix Administrator CLI scripts.

LDAP Servers

Required. All users that access TIBCO ActiveMatrix BPM must exist in an external LDAP directory.

When running TIBCO Configuration Tool to configure BPM, you can choose to either:

- deploy the internal LDAP directory that is provided with TIBCO ActiveMatrix BPM, or
- specify an external LDAP directory server.

If you specify an external LDAP directory server:

—specify an LDAP username and password for the **tibco-admin** user. See Configuring the BPM Admin user (if using an external LDAP directory server) for details.

—the LDAP server must be running before you install TIBCO ActiveMatrix BPM.

TIBCO ActiveMatrix BPM is compatible with any LDAP Server that uses the Lightweight Directory Access Protocol (LDAP) version 3. TIBCO ActiveMatrix BPM has been specifically tested with:

- Apache Directory Server 1.5.5
- Microsoft Active Directory 2008

Chapter 2 Pre-install Considerations

This chapter describes the factors to be considered before installing the product.

Topics

- Determine the Architecture for Your System, page 20
- Disaster Recovery, page 27
- Backup and Restore, page 29
- Decide the Approach to Create the Databases, page 31

Determine the Architecture for Your System

The architecture of a system depends on various factors such as:

- Number of users for the system (includes registered, concurrent, and active users).
- Scalability
- Performance expectations
- Typical work volumes such as the number of work items, pageflows, business services, or enterprise processes that need to be processed per minute.

Depending on your requirements, you can choose one of the following:

High availability, fault-tolerant (HA-FT) System

In the event of a hardware failure resulting in the failure of TIBCO ActiveMatrix BPM, a highly available, fault tolerant system starts TIBCO ActiveMatrix BPM on another machine, thus ensuring limited service interruption and no loss of data or messages. Setting up this architecture also involves distributing the components over different machines. See Highly Available and Fault Tolerant System for details.

Setting up a Highly Available, Fault Tolerant System describes how to set up a highly available, fault tolerant system using a third-party solution or active-active clustering.

Distributed System (without HA-FT features)

Logical nodes can also be distributed to different physical noes, to provide specialization and horizontal scalability capabilities according to the enterprise's needs. A distributed system enables you to scale only certain components of the BPM runtime so as to boost the performance of your system. See Distributed System for details.

For example, if your services exercise the Process Manager component the most, you can configure the Process Manager component on a different host. You can then scale it up by adding more Process Manager components (or scale it down by removing some Process Manager components) on that host without affecting the rest of the system.

Setting up a Distributed System describes how to set up a distributed system.

Basic System

A basic system consists of a simple installation with all the components installed on a single machine that can be used for validation purposes. This type of setup is not suitable nor recommended for production purposes. However, you can use this for testing or demonstration purposes. Installing the Product describes how to install a basic system.

Setting up the advanced architectures may involve repeating one or many of the steps of setting up a basic system along with some additional configurations.

Highly Available and Fault Tolerant System

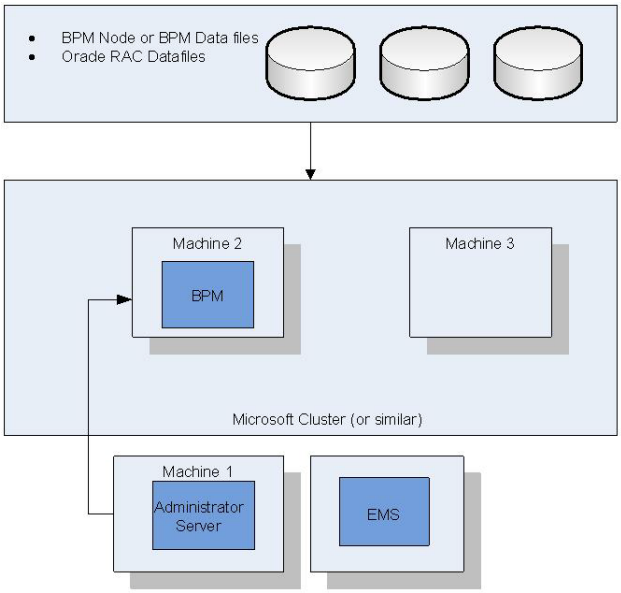
In the event of a hardware failure resulting in the failure of TIBCO ActiveMatrix BPM, a highly available, fault tolerant system starts TIBCO ActiveMatrix BPM on another machine, thus ensuring limited service interruption and no loss of data or messages.

This is achieved by configuring TIBCO ActiveMatrix BPM using either:

- A third party solution such as Microsoft Cluster, HP ServiceGuard, or Oracle RAC, or
- Active-active clustering.

Using Third Party Solution

Figure below illustrates the use of third-party solutions to provide highly available, fault tolerant capabilities to your BPM runtime.



The setup requires at least three machines, say M1, M2, and M3, where:

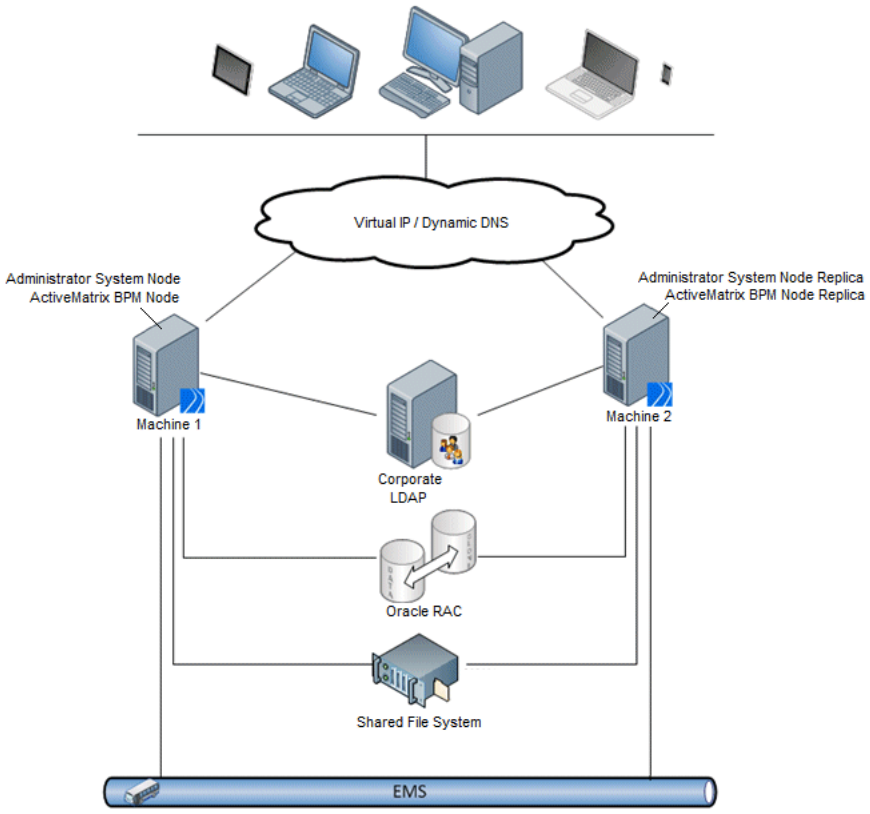
- TIBCO ActiveMatrix BPM (or at least the data folder) is on the shared file system which is only available to the machine that has a fully operational TIBCO ActiveMatrix BPM node installed and running.
- TIBCO ActiveMatrix BPM and TIBCO ActiveMatrix Administrator are installed and running on one machine (M1).
- The other machines (M2 and M3) are:
  - connected to a shared file system
  - a part of an active-passive clustering setup. At any given time, one of the machines will have access to the shared file system on which the TIBCO ActiveMatrix BPM Node is installed/running.

    In case of any catastrophic event such as power loss, hardware failure, network disruption, or operating system crash, the cluster software detects it and fails over to the next available server.
  - One of these two machines should have a fully operational TIBCO ActiveMatrix BPM node installed and running.

See Using A Third-Party Solution on page 54 for details on implementing this scenario.

Using Active-Active Cluster

TIBCO ActiveMatrix BPM can be deployed to provide a high-availability, fault-tolerant configuration, using active-active clustering. Figure below illustrates the logical architecture using an active-active clusters to provide a highly available, fault tolerant capability to the BPM runtime.



See Using Active-Active Clustering on page 56 for details on implementing this scenario.

Distributed System

A distributed system enables you to scale only certain components of the BPM runtime so as to boost the performance of your system. The logical nodes can be distributed to different physical nodes, thus enabling horizontal scalability to suit the needs of an enterprise.

Some example scenarios that a distributed system can cater to include:

- an enterprise whose focus is on straight-through processing and enterprise integration may want to direct more resources to Process Manager nodes.
- a call center-based enterprise may require more Work Manager nodes.

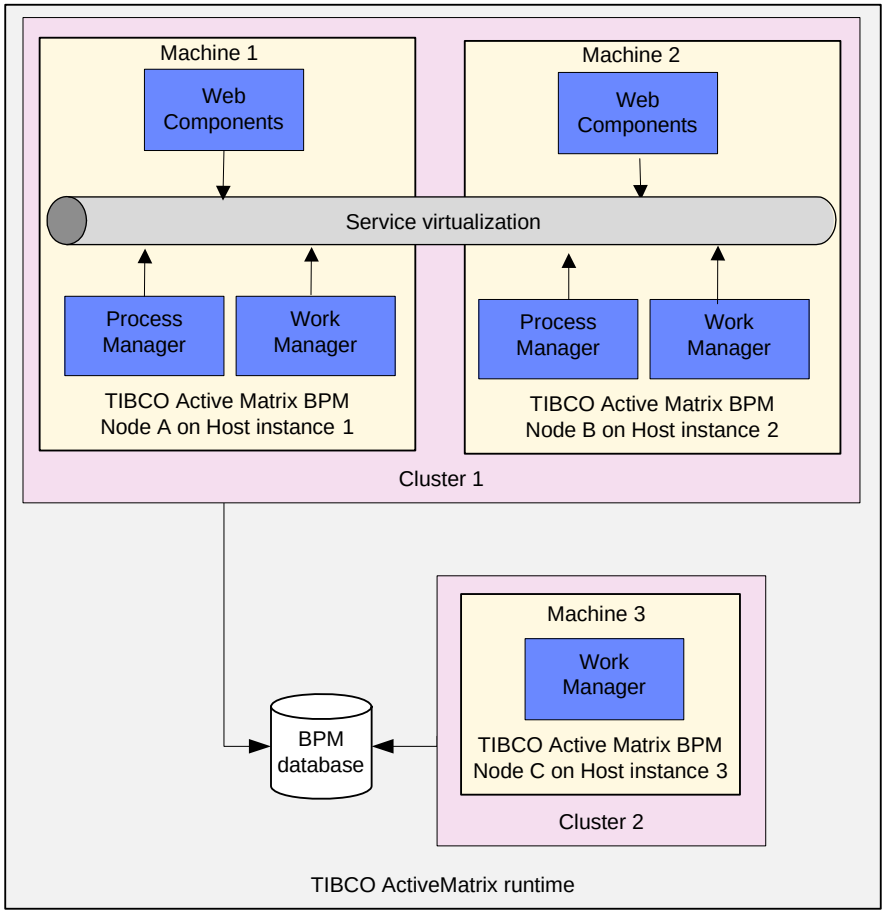
A distributed configuration requires homogenous software configuration. Each member of the cluster must use the same TIBCO ActiveMatrix BPM logical node type.

For more information about TIBCO ActiveMatrix BPM logical nodes, see *TIBCO ActiveMatrix BPM Concepts*.

Consider an example where TIBCO ActiveMatrix BPM Nodes A, B, and C are distributed between three machines, such that:

- Node A runs a logical node of type BPM Node.
- Node B runs a logical node of type BPM Node.
- Node C runs a logical node of type Work Manager.

The following diagram illustrates this scenario:



In such a distributed environment:

- The capacity of each part of the system - web tier, process management, or work management - can be scaled up or down as requirements change by adding or removing further logical nodes to the relevant cluster (subject to the underlying capabilities of the cluster itself).
- Nodes can be hosted on individual clusters, single machines, or all parts of the system on non-clustered machines.
- Users need not be aware of the topology of TIBCO ActiveMatrix BPM when deploying applications. An application is simply deployed to the TIBCO ActiveMatrix BPM runtime, which automatically deploys the relevant parts of the application to all the logical nodes where it is required.

See Setting up a Distributed System on page 85 for details on implementing this scenario.

Disaster Recovery

TIBCO recommends replicating the key parts of the BPM runtime to ensure that your system can be recovered in the event of a disaster.

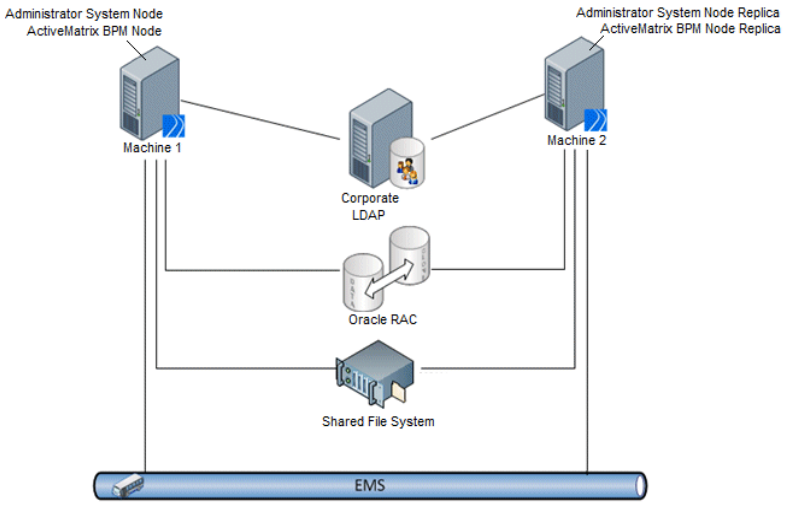
The data from following parts of a TIBCO ActiveMatrix BPM system must be replicated on a separate system such that all data sources are consistent.

- *TIBCO_HOME* and *CONFIG_HOME* directories for the TIBCO ActiveMatrix BPM installation. If the BPM configuration files are in a different location, you must replicate them as well.
- TIBCO ActiveMatrix BPM database
- TIBCO ActiveMatrix Administrator database
- TIBCO Enterprise Message Service server
- Corporate LDAP system.

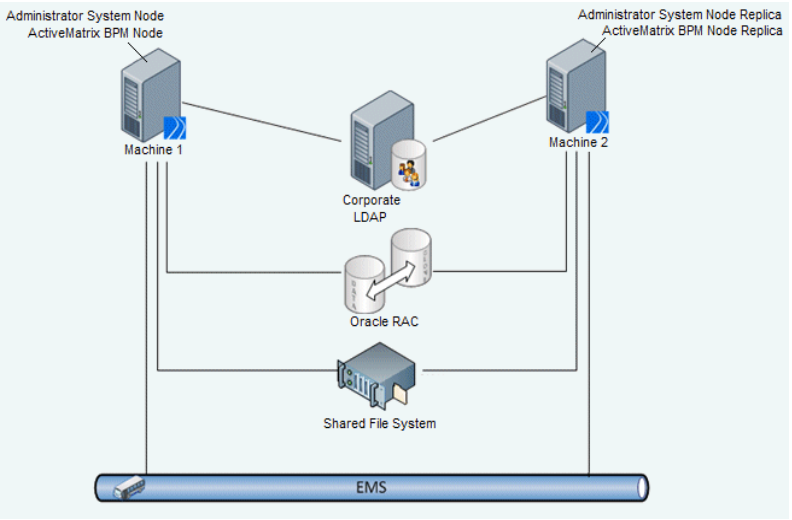
The method for replicating this data depends on your specific company practices and policies.

The following diagram shows an example of this type of configuration.

Highly Available Active-Active System



Replicated Backup System



Backup and Restore

A backup of your system ensures that a stable version of your system is available for use in case the running system runs into problems and gets corrupted. In such a case, you can restore your system using the backup to the last backed up stable state. Depending on the backup mechanism employed, there may be some amount of data loss.

Back Up Your System

Before taking a backup, ensure that the system is in a state where a back-up can be performed. This means that the system needs to be in a stable state, and either shutdown or offline as applicable.

Ensure that you preserve the file timestamps when taking a backup. This is important when restoring from a backup because the file timestamps are used to decide the right order to recreate components.

Backing up your BPM runtime involves saving the following components or folders of your system:

- Installation folders on all the machines where TIBCO ActiveMatrix BPM has been installed. If you have a distributed or a HA-FT system, ensure that you repeat the process for all the machines in the cluster that have TIBCO ActiveMatrix BPM installed on them.
- *TIBCO_HOME* and *CONFIG_HOME* directories
- TIBCO ActiveMatrix BPM database
- TIBCO ActiveMatrix Administration database
- TIBCO Enterprise Message Service (EMS) server

If you are using a Workspace custom configuration, you may need to back up the TIBCO Workspace configuration files to ensure that the custom configuration is not lost when you upgrade the software. Also, if you are running a custom WCC application, you may need to repackage and redeploy your applications to pick up any changes in the upgraded software. See Backup Procedure for TIBCO Workspace for details.

Restore from a Backup

To restore TIBCO ActiveMatrix BPM from a backup, do the following:

1. Shutdown TIBCO ActiveMatrix BPM. Refer to *TIBCO ActiveMatrix BPM Administration Guide* for information.
2. Shutdown the TIBCO Enterprise Message Service server. Refer to the documentation supplied with TIBCO Enterprise Message Service for information.
3. Copy the contents of TIBCO_HOME and CONFIG_HOME directories from the backup to their original location.
4. Recover the TIBCO ActiveMatrix BPM database and make sure the database is online. Refer to the documentation provided with your database for information.
5. Recover the TIBCO ActiveMatrix Administrator database. Refer to the documentation provided with TIBCO ActiveMatrix Administrator for information.
6. Recover the TIBCO Enterprise Message Service server. Refer to the documentation supplied with TIBCO EMS for information.
7. Restart the TIBCO Enterprise Message Service server. Refer to the documentation supplied with TIBCO EMS Server for information.
8. Restart TIBCO ActiveMatrix BPM. Refer to *TIBCO ActiveMatrix BPM Administration Guide* for information.
9. Check that all the TIBCO ActiveMatrix BPM components are running. To do this:
    a. Login to TIBCO Administrator.
    b. Click **Applications**.
    — Make sure the TIBCO ActiveMatrix BPM applications have a status of **Running**.
    — Make sure your project applications are in the correct state (in other words, in the same state as they were at the time of back-up).

Decide the Approach to Create the Databases

The ActiveMatrix BPM database and Administrator database are required for the successful installation of the product. You can choose to use one of the following:

- HSQLDB that is bundled with the software, or
- An external database.

If you decide to use the external databases, ensure that the databases are created and any required configurations are completed. See Setting up the Databases for details.

PART TWO INSTALLATION

Chapter 3 Pre-Installation Tasks

This chapter describes the tasks that need to be performed to configure the third party software before installing TIBCO ActiveMatrix BPM.

Topics

- Setting up the Databases, page 35
- Configuring Other Third Party Software, page 40

Setting up the Databases

Depending on the approach chosen to setup the database, you may need to configure the database before installing the product.

The pre-install configurations are not required if you choose to allow TIBCO Configuration Tool to create the TIBCO ActiveMatrix BPM database. However, if you choose to use an external database, configure the database as described here:

TIBCO ActiveMatrix BPM Database

If you select a database other than HSQLDB for your TIBCO ActiveMatrix BPM database and you have not configured the external database before running the Create TIBCO ActiveMatrix BPM wizard, then the Create TIBCO ActiveMatrix BPM wizard will fail.

Using Microsoft SQL Server 2008

Mixed Mode Authentication

Ensure that the security mode for your instance of the server is set to **Mixed Mode Authentication**.

Enable Port 1433

Ensure that port 1433 is enabled. If it is not enabled already, do the following:

1. In the SQL Server Configuration Manager's console pane, expand **SQL Server Network Configuration**.
2. In the console pane, click **Protocols for <*instance_name*>** where *instance_name* is the name of the TIBCO ActiveMatrix BPM database.
3. In the Details page, right-click **TCP/IP** and click **Enable**.

Support for XA Transactions is Enabled

Ensure that your database supports XA transactions. To enable support for XA transactions, do the following:

1. If you have not already done so, download the JDBC driver for the version of Microsoft SQL Server you are using. JDBC Drivers on page 40 provides the location to download the JDBC drivers.
2. Follow the instructions to install the driver.

3. Connect to SQL Server 2008 Management Studio as an administrator of the SQL Server Instance.
4. From the location where you installed the Microsoft SQL Server JDBC Driver, run the **sqljdbc_*n.n*\enu\xa\xa_install.sql** script against the **master** database where *n.n* is the version number of the Microsoft SQL Server JDBC Driver you are using. The first time you run this you may see errors about failing to drop procedures. These errors may be ignored as the procedures do not exist yet.
5. Depending on your operating system, from the location where you installed the Microsoft SQL Server JDBC Driver, copy either
   - **sqljdbc_*n.n*\enu\xa\x86\sqljdbc_xa.dll**, or
   - **sqljdbc_*n.n*\enu\xa\IA64\ sqljdbc_xa.dll**, or
   - **sqljdbc_*n.n*\enu\xa\x64\ sqljdbc_xa.dll** file

   to the **Binn** folder of the SQL server being used (for example, **C:\Program Files\Microsoft SQL Server\MSSQL10.MSSQLSERVER\MSSQL\Binn)** where *n.n* is the version number of the Microsoft SQL Server JDBC Driver you are using.
6. Click **Control Panel** > **Administrative Tools**.
7. Double-click **Component Services**. The **Component Services** dialog is displayed.
8. Drill down to **Component Services** > **Computer** > **My Computer** > **Distributed Transaction** > **Local DTC**.
9. Right-click **Local DTC** and select **Properties**. The **Local DTC Properties** dialog is displayed.

   Click **Security**. Make sure the **Enable XA transactions** check box is selected.

Using Oracle 11g

Create Database Instance with Character Set AL32UTF8 for Multilingual Data

When creating the Oracle database instance, ensure that you select the **AL32UTF8** character set for multilingual data.

AL32UTF8 supports the latest version of the Unicode standard and provides a full supplementary character support. (Examples of supplementary characters include Chinese, Japanese, Korean, gothic, mathematical, or musical.)

Set OPEN CURSORS for the Database

Login to the TIBCO ActiveMatrix BPM database as the DBA and set the maximum open cursors for the database to at least 400 using the following:

```
ALTER SYSTEM SET OPEN_CURSORS=400 SID=db_name
```

Using DB2

Create User To Grant Permissions on The Database

Identify an operating system user, or create a new operating system user if needed who can be granted the ActiveMatrix BPM database user permissions.

When configuring the ActiveMatrix BPM server, the database user permissions will be granted to an operating system user. You must have an operating system user already created before installing the BPM runtime.

Create Database and Set Pagesize to 16384

You must create a database manually as DB2 installation does not create a default database.

Create a database using either the DB2 Control Center, or the DB2 Command Line Processor (CLP), and set the database pagesize to **16384**.

Access to SYSTOOLSPACE

Ensure that the SYSTOOLSPACE tablespace has been created before proceeding to configure the TIBCO ActiveMatrix BPM Server. This is necessary as some scripts require access to the SYSTOOLSPACE tablespace to run successfully. See the vendor's documentation for details on how to create the tablespace manually.

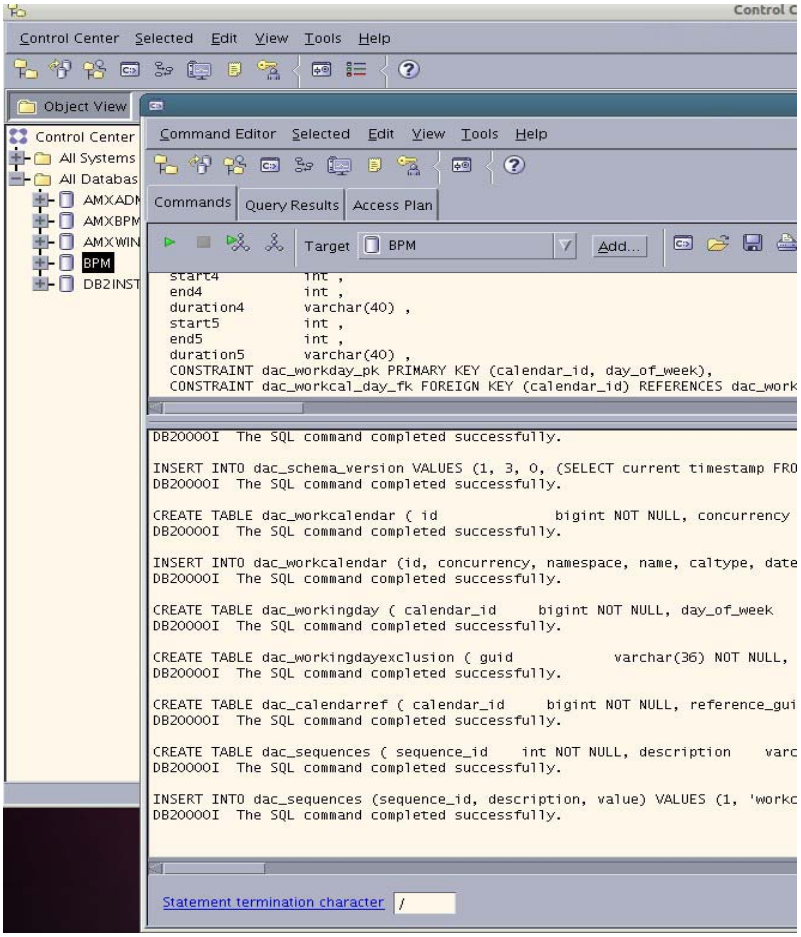
Set the Statement Termination Character to '/'

This setting is required only if you are manually creating or running the database scripts.

Not all the scripts use the same termination character. For example, the termination character for `WorkManagerCreate.sql` is '/' and for `createdb-admin.sql` and `ProcessManagerCreate.sql` scripts is '**;**'.

Ensure that you examine the scripts and set the appropriate termination character using the DB2 Control Center. Doing so ensures that the scripts can be used from either the DB2 Control Center or the DB2 Command Line Processor.

You can set the statement termination character from the DB2 Control Center as shown below:


Control Center Selected Edit View Tools Help
Object View
Control Center
All Systems
All Databas
AMXADM
AMXBPM
AMXWIN
BPM
DB2INST
Command Editor Selected Edit View Tools Help
Commands
Query Results
Access Plan
Target
BPM
Add...
start4 int ,
end4 int ,
duration4 varchar(40) ,
start5 int ,
end5 int ,
duration5 varchar(40) ,
CONSTRAINT dac_workday_pk PRIMARY KEY (calendar_id, day_of_week),
CONSTRAINT dac_workcal_day_fk FOREIGN KEY (calendar_id) REFERENCES dac_work
DB20000I The SQL command completed successfully.
INSERT INTO dac_schema_version VALUES (1, 3, 0, (SELECT current timestamp FRO
DB20000I The SQL command completed successfully.
CREATE TABLE dac_workcalendar (id bigint NOT NULL, concurrency
DB20000I The SQL command completed successfully.
INSERT INTO dac_workcalendar (id, concurrency, namespace, name, caltype, date
DB20000I The SQL command completed successfully.
CREATE TABLE dac_workingday (calendar_id bigint NOT NULL, day_of_week
DB20000I The SQL command completed successfully.
CREATE TABLE dac_workingdayexclusion (guid varchar(36) NOT NULL,
DB20000I The SQL command completed successfully.
CREATE TABLE dac_calendarref (calendar_id bigint NOT NULL, reference_gui
DB20000I The SQL command completed successfully.
CREATE TABLE dac_sequences (sequence_id int NOT NULL, description varc
DB20000I The SQL command completed successfully.
INSERT INTO dac_sequences (sequence_id, description, value) VALUES (1, 'workc
DB20000I The SQL command completed successfully.
Statement termination character
/

TIBCO ActiveMatrix Administrator Database

When running the Create TIBCO ActiveMatrix BPM wizard, you must specify a database for the TIBCO ActiveMatrix Administrator server. The default database type is the database that you selected for your TIBCO ActiveMatrix BPM database.

If you want your TIBCO ActiveMatrix Administrator server to use HSQLDB as the TIBCO ActiveMatrix Administrator database, no pre-configuration is required.

However, if you want TIBCO ActiveMatrix Administrator database to use an external database other than HSQLDB then, configure the external database as

described before running the Create TIBCO ActiveMatrix BPM wizard or Create TIBCO ActiveMatrix Administrator Server wizard:

Oracle 11gR2 database: Ensure that the Oracle user specified when configuring the TIBCO ActiveMatrix Administrator server does not possess the "dba" privileges. However, the user must have connect and resource privileges, and be assigned to the default schema.

Microsoft SQL Server: Before creating the TIBCO ActiveMatrix Administrator server:

- Set `READ_COMMITTED_SNAPSHOT ON` by running the command:
  ```
  alter database DBName set read_committed_snapshot on
  ```
- Ensure that the database user is assigned the default database and has the **db_owner** role.
- Ensure that you are using the case insensitive collation setting.

The Microsoft SQL Server must be configured for XA Transactions and must support mixed mode authentication; see Using Microsoft SQL Server 2008 for details..

DB2 Workgroup Edition 9.7.3/9.7.4: See Using DB2 for details on creating and configuring a DB2 database.

- Configure the database with a 32KB page size (instead of the default 4KB).

Configuring Other Third Party Software

This section describes the considerations and any additional configurations that need to be performed on the third party software before installing ActiveMatrix BPM.

LDAP Server

If you want to specify an external LDAP directory server then, before you install TIBCO ActiveMatrix BPM, you must:

- specify an LDAP username and password for the **tibco-admin** user, see below.
- ensure that the LDAP server is running.

Configuring the BPM Admin user (if using an external LDAP directory server)

This only applies if you decide to use an external LDAP directory server rather than the internal LDAP directory server provided with TIBCO ActiveMatrix BPM.

All users that access TIBCO ActiveMatrix BPM must exist in an external LDAP directory. TIBCO ActiveMatrix BPM requires a single user to be configured as the **tibco-admin** user. When running the TIBCO Configuration Tool to configure BPM, if you decide to use the internal LDAP directory server, the **tibco-admin** user is created automatically.

If you decide to use an existing LDAP directory server, you are asked to specify the full DN for an existing LDAP user and the password. This information defines the real user when logging in as **tibco-admin**. The LDAP user must be an existing LDAP user.

JDBC Drivers

To connect with the database, TIBCO ActiveMatrix BPM requires a JDBC driver for the database you are using. During installation, you are asked for the location of the JDBC Driver. Therefore, you need to have a local copy of the JDBC Driver for the database you are using before you start installing TIBCO ActiveMatrix BPM.

If you are using:

- SQL Server 2008 with Service Pack 1 or later:
  a. Depending on the version of the Microsoft SQL Server JDBC Driver you want to use, download either:
     —**Microsoft SQL Server JDBC Driver 3.0** from http://www.microsoft.com/download/en/details.aspx?id=21599
     —**Microsoft SQL Server JDBC Driver 2.0** from http://www.microsoft.com/download/en/details.aspx?id=2505
  b. Follow the instructions to install the driver.
- Oracle 11g Release 2, 32-bit and 64-bit

  When installing TIBCO ActiveMatrix BPM, specify **ojdbc6.jar** from your Oracle installation.
- IBM DB2 9.7.2 Workgroup Edition or later:

  Download the JDBC driver labelled 9.7 FP4 which is available as part of the IBM Data Server Driver Package.

Apache Ant

Required to run TIBCO Configuration Tool scripts, TIBCO ActiveMatrix runtime objects upgrade, or TIBCO ActiveMatrix Administrator CLI scripts.

You can either download and install Apache Ant (Version 1.7.1 is required) or use the version of Apache Ant that is supplied with TIBCO ActiveMatrix BPM. TIBCO recommends that you use the version of Apache Ant supplied with TIBCO ActiveMatrix BPM. To do this:

1. Create an environment variable that points to *TIBCO_HOME*.

2. Run the following lines from a command shell:

On Windows

```
set JAVA_HOME=%TIBCO_HOME%\tibcojre\1.6.0
set CLASSPATH=%TIBCO_HOME%\tools\lib\antpackage.jar
set RUN_ANT="%JAVA_HOME%/bin/java" -XX:MaxPermSize=1024m -cp
"%CLASSPATH%" org.apache.tools.ant.Main
set ANT_OPTS=-Xmx1024m -XX:MaxPermSize=1024m -Xms256
```

On UNIX/Linux

```
JAVA_HOME=$TIBCO_HOME/tibcojre64/1.6.0
CLASSPATH=$TIBCO_HOME/tools/lib/antpackage.jar
RUN_ANT="$JAVA_HOME/bin/java -XX:MaxPermSize=1024m -cp
$CLASSPATH org.apache.tools.ant.Main"
ANT_OPTS="-Xmx1024m -XX:MaxPermSize=1024m -Xms256"
export JAVA_HOME RUN_ANT ANT_OPTS
```

3. Before executing CLI scripts from the command prompt, confirm:
   - the value of `ANT_OPTS`
   - the version of Apache Ant you are using
4. Invoke Apache Ant from a command line as follows:

On Windows

```
%RUN_ANT%
```

On UNIX/Linux

```
$RUN_ANT
```

File Descriptors (on Linux)

This only applies to Red Hat Enterprise Linux v5.4 and SUSE Enterprise Linux 11 (64 Bit)

The maximum number of open files/file descriptors that a user can open is controlled by the operating system. The threshold on Linux is typically too low and has to be increased. The exact number depends on the features selected during installation and the size of the workspace but our experience is that 10000 is plenty. You can find out the number on your system by running `ulimit -n` from a terminal window. To increase the max number of files that can be opened:

1. Edit the `/etc/security/limits.conf` file and add the following line:

```
* hard nofile 10000
```

2. Log out of the system and log back in.
3. On machines on which TIBCO Business Studio is installed, add the following parameter to your `TIBCOBusinessStudio.ini` file.

```
-Dorg.eclipse.swt.browser.XULRunnerPath=/usr/lib/xulrunner
```

The `xulrunner` folder might have a version attached to it. In that case make sure you specify the correct folder name.

Chapter 4 Installation

This chapter describes how to install TIBCO ActiveMatrix BPM in one of the installation modes: GUI, console, or silent.

Topics

- Installing the Product, page 46
- Setting up a Highly Available, Fault Tolerant System on page 54
- Setting up a Distributed System on page 85

Installing the Product

Install the product using one of the modes described in the sections:

- Installing in GUI mode on page 46
- Installing in Console mode on page 50
- Install in Silent mode on page 50

When installing the Administration or Runtime Host profiles in GUI mode, the installer allows you to invoke the TIBCO Configuration Tool, a utility to create an ActiveMatrix Administrator server, TIBCO Host instances, and a BPMNode node, and package third-party drivers. If you are installing in console or silent mode you must run TIBCO Configuration Tool after installation completes. See Chapter 5, Creating and Configuring Runtime Objects for details.

Installing in GUI mode

1. Open the physical media or download the TIBCO ActiveMatrix BPM archive file.
2. Extract the TIBCO ActiveMatrix BPM archive file to a temporary directory.
3. Navigate to the temporary directory.
4. If your machine will not be connected the Internet during installation, ensure that the required software assemblies are downloaded and saved to either the `assemblies` subdirectory of the temporary directory in step 2. on page 46 (the preferred option to streamline installation) or to another temporary directory. See Software Requirements on page 13 for details regarding the required assemblies.
5. Run **TIBCOUniversalInstaller**. The Welcome screen displays.
6. Click **Next**. The License Agreement screen appears.
7. Review the terms of the license agreement and, if you agree to them, click **I accept the terms of the license agreement**. Click **Next** to proceed with the installation. If you do not agree to the terms of the license agreement, click **Cancel** to exit from the installation process.

   The Installation Profile Selection screen displays.
8. Select a profile on the left. The right pane displays the features selected by default for the chosen profile.

   To customize the features to be installed, check the **Customize Installation** checkbox and check the checkboxes next to the features to be installed.

9. Click **Next**. The TIBCO Installation Home screen displays. Choose a new installation environment or an existing installation environment:

   — **Create a New** *TIBCO_HOME* Specify the properties:

Directory	The directory into which the product is installed. The directory cannot be the same as the directory of an existing installation environment. Accept the default location, type a directory, or click **Browse** to choose the directory. The directory path cannot contain special characters such as "*", "#", "?", ">", "<", "%", "&", "$", "`" or "|".
Name	Identifies the installation environment. The name cannot contain special characters such as "*", "?", ">", "<", ":", "|", "/", "\", or quotes (").

   TIBCO recommends that you install TIBCO ActiveMatrix BPM into a new, empty installation environment (separate from other TIBCO products). Select **Create a new TIBCO_HOME**. Click **Browse** to specify an environment location (a directory path to an empty folder where the software will be installed), or accept the default environment location. The installer automatically creates an environment name for the location you specify. The default is **amx-bpm**.

   — **Use an Existing** *TIBCO_HOME* Select the home from the drop-down list. TIBCO recommends this option when upgrading TIBCO ActiveMatrix BPM.

   Click **Next**.

10. The Hibernate License Agreement dialog displays. Review the terms of the license agreement and, if you agree to them, click **I accept the terms of the license agreement**. Click **Next** to proceed with the installation.

    On **Linux and Solaris** The LPGL License Agreement screen displays. After reading through the license text, click **I accept the terms of the license agreement**.

    If you do not agree to the terms of the license agreement, click **Cancel** to exit from the installation process.

11. Click **Next**. If the Hibernate software is not in the `assemblies` subdirectory of your temporary directory, the Download Hibernate screen displays. Choose a download option:

    — **Download Hibernate assembly from TIBCO** Choose this option if you are connected to the Internet or do not want to use a previously downloaded

assembly. The assembly is automatically downloaded and stored into the `assemblies` subdirectory of the directory where you extracted TIBCO ActiveMatrix Service Grid software.

— **Select the Hibernate assembly previously downloaded from TIBCO** Choose this option if you are not connected to the Internet. Click **Browse** to navigate to the directory where a Hibernate assembly that was previously downloaded is stored. Select the assembly and click **Open**.

12. The Download Hibernate screen displays. Select one of the following:

    — **Download Hibernate assembly from TIBCO**: Choose to let the installer download the Hibernate from TIBCO. The installer downloads Hibernate and stores into the folder where you extracted the product software.

    — **Select the Hibernate assembly previously downloaded from TIBCO**: Choose to provide the location where a Hibernate assembly that was previously downloaded from TIBCO is stored. Browse and select the directory containing the Hibernate assembly.

13. Click **Next**. If you chose to download Hibernate, a screen displays the Hibernate assembly download process.

14. **Linux and Solaris** If you choose to install TIBCO Host and the product_tibco_eclipse_lgpl_3.5.2.001 assembly is not in the `assemblies` subdirectory of your temporary directory, the LPGL Assembly Download screen displays. Choose a download option:

    — **Download Gnome Binding assembly from TIBCO** Choose this option if you are connected to the Internet or do not want to use a previously downloaded assembly. The assembly is automatically downloaded and stored into the `assemblies` subdirectory of the directory where you extracted TIBCO ActiveMatrix BPM software.

    — **Provide the location for the assembly previously downloaded from TIBCO** Choose this option if you are not connected to the Internet. Click **Browse** to navigate to the directory where the

product_tibco_eclipse_lgpl_3.5.2.001 assembly that was previously downloaded is stored.

TIBCO Universal Installer
TIBCO
The Power of Now
LGPL Assembly Download
This installer can download the required LGPL assembly for you from TIBCO or you may specify the directory where you have previously downloaded the required LGPL assembly. Note that you must use the assembly available from TIBCO; the assembly will be copied from that location. Please choose one of the following options.
Download Gnome Binding assembly from TIBCO.
Provide the location for the assembly previously downloaded from...
Gnome Binding Assembly Path
ibco_eclipse_lgpl_3.5.2.001_linux24gl23_x86.zip
Browse
Back
Next
Cancel

Select the assembly and click **Open**.

15. **Linux and Solaris** Click **Next**. If you chose to download the assembly, a screen displays the assembly download process.
16. The TIBCO Configuration Directory screen displays. The configuration directory (CONFIG_HOME) stores BPM configuration information, for example, the properties for Workspace and Openspace. Click **Next** to accept the default location or Browse and select the directory where you want your configuration information to be stored. Ensure that the selected directory is not the configuration directory for another TIBCO installation environment.

Note that the TIBCO Configuration Directory specifies a different default location for the configuration directory than the actual location. For example, `c:\ProgramData\amx-bpm\tibco\cfgmgt` when the actual location is `c:\ProgramData\amx-bpm\tibco\data`. This is because the TIBCO Configuration Tool specifies a different location for the configuration folder than the TIBCO ActiveMatrix BPM installer. The TIBCO Configuration Tool will use the location you have specified in the TIBCO ActiveMatrix BPM installer

17. The Pre-Install Summary screen displays. Verify the list of products/components selected for install.

To change any of your choices, click **Back** to navigate back to the appropriate point. You can then restart the installation process from that point.

18. Click **Install**. While the installer performs the necessary installation tasks, the Installing Component *n* of *NN* screen displays, where *NN* is the total number of components to be installed. After all the components are installed, the Running Product ANT Tasks screen displays. Click **Show Details** on the dialog to see the tasks that the installer is performing.
19. Once the installer completes the installation tasks, the Post-Install summary screen is displayed. Review the list of features that have been installed.

    The **Launch TIBCO Configuration Tool** checkbox is selected by default. TCT provides a set of wizards that allow you to configure the runtime objects and drivers required by TIBCO ActiveMatrix BPM. Uncheck the checkbox if you do not want to configure the product right away.
20. Click **Finish** to complete the installation process and close the installer window. If you left the **Launch TIBCO Configuration Tool** checkbox checked, the TIBCO Configuration Tool is launched. See Chapter 5, Creating and Configuring Runtime Objects for details on using the tool.

There is a slight delay while the installer deletes the temporary files before closing the installer window.

Installing in Console mode

1. Open the physical media or download the TIBCO ActiveMatrix BPM package.
2. Extract the archive file to a temporary directory.
3. Using a console window, navigate to the temporary directory.
4. Run **TIBCOUniversalInstaller -console**.
5. Complete the installation by responding to the console window prompts.
6. Once the installation completes, you can create the TIBCO ActiveMatrix BPM server and TIBCO ActiveMatrix Administrator server using TIBCO Configuration Tool (TCT). See Chapter 5, Creating and Configuring Runtime Objects for details.

Install in Silent mode

In silent mode, the universal installer does not prompt for any inputs during installation. Instead, the installer uses the values specified in the **`TIBCOUniversalInstaller-amx-bpm_1.3.0.silent`** file.

The `TIBCOUniversalInstaller-amx-bpm_1.3.0.silent` file is packaged in the directory that contains the universal installer. Edit the file with information for your environment before launching the silent installation. The `.silent` file includes comments that describes the installation properties that you can set.

It is a good practice to make a copy of the original `TIBCOUniversalInstaller-amx-bpm_1.3.0.silent` file before making any changes to it.

To install the product in silent mode:

1. Download the TIBCO ActiveMatrix BPM package.
2. Extract the contents of the package to a temporary directory.
3. Using a console window, navigate to the temporary directory.
4. Make a copy of the `TIBCOUniversalInstaller-amx-bpm_1.3.0.silent` file and rename it.
5. Using a text editor, open the `TIBCOUniversalInstaller-amx-bpm_1.3.0.silent` file and specify the following properties::

You must make sure that all drive letters are in upper case, otherwise the silent installation may fail. The `TIBCOUniversalInstaller-amx-bpm_1.3.0.silent` file uses lower case drive letters by default.

Parameter	Value	Description
`installationRoot`	Default: `C:\tibco\amx-bpm`	Directory where the product is to be installed.
`environmentName`	Default: `amx-bpm`	Name of the TIBCO installation environment.
`entry key="BPM_bpm">true </entry`	Default: `BPM_bpm`	Key to specify the product features to be installed. Valid choices are: • BPM_bpm - installs the full ActiveMatrix BPM software. • Administration Environment_bpm - installs the ActiveMatrix Administrator Server and TIBCO Host software. • TIBCO Host - installs TIBCO Host software only.

Parameter	Value	Description
`configDirRoot`	Default: `C:\ProgramData\amx-bpm`	Location of the configuration files for the given installation environment.

6. If the installation machine is not connected to the Internet, you must download the assembly containing Hibernate and save it to the `assemblies` subdirectory of the temporary directory where your installer archive is extracted (the preferred option to streamline installation) or to another temporary directory accessible to the installation machine. See Software Requirements on page 13 for details.

   By default, the silent file is configured to download Hibernate automatically.

```
<entry key="downloadHibernate">false</entry>
<entry key="hibernatePath">folder containing downloaded Hibernate assembly</entry>
```

   You can update the following entries to specify the absolute path of the previously downloaded assembly:

```
<entry key="downloadHibernate">false</entry>
<entry key="hibernatePath">folder containing downloaded Hibernate assembly</entry>
```

7. On Linux ans Solaris platforms, you must also update the entries to download the required Eclipse LGPL software assemblies. See Software Requirements on page 13 for details. By default, the silent file is configured to download the assemblies automatically.

```
<entry key="LGPLAssemblyLicenseAccepted">true</entry>
<entry key="LGPLAssemblyDownload">true</entry>
<entry key="LGPLAssemblyPath"></entry>
```

   You can update the following entries to specify the absolute path of the previously downloaded assemblies on the system instead:

```
<entry key="LGPLAssemblyLicenseAccepted">true</entry>
<entry key="LGPLAssemblyDownload">false</entry>
<entry key="LGPLAssemblyPath">folder containing downloaded LPGL assemblies</entry>
```

8. Run the following:

   On Windows - `TIBCOUniversalInstaller.exe -silent`

   On UNIX\Linux - `TIBCOUniversalInstaller -silent`

   When installation completes, a line similar to the following is written to the installer log file:

```
Install, com.tibco.installer.util.TIBCOInstaller, dbg.Debug,
The installation has completed. Please check the log file for
additional information.
```

When you install the product in silent mode, it also creates the `.silentinstall` file that can be used to configure TIBCO ActiveMatrix BPM in the silent mode. The silentinstall script file is created under the `TIBCO_HOME\bpm\1.3\scripts\silent` directory as:

- on Windows: `silentinstall.bat`
- on UNIX/Linux: `silentinstall`

You can run the `silentinstall` utility to run the scripts that set up the third party driver and configure and deploy TIBCO ActiveMatrix BPM. See Creating and Configuring Runtime Objects, page 92 for details about configuring your BPM installation in the silent mode.

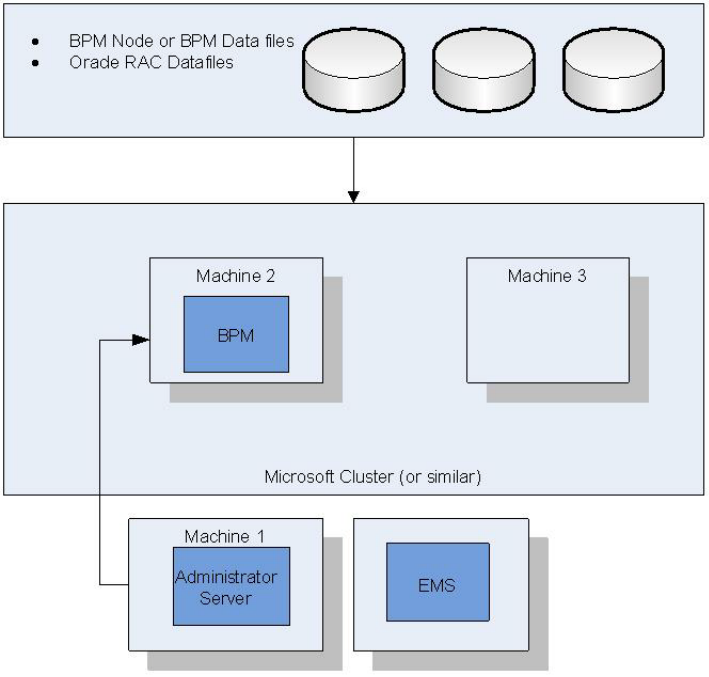
You can create a clustered environment configured to use SSL (including a replicated ActiveMatrix Administrator) in the silent mode. See Appendix A, Creating a Clustered Environment With SSL for details.

Setting up a Highly Available, Fault Tolerant System

This section describes setting up a highly available, fault tolerant system using either a third party system or a clustered environment.

Using A Third-Party Solution

The following diagram illustrates the basic setup required for a highly available, fault tolerant system using a third-party solution. See section Using Third Party Solution on page 22 for a brief overview of this setup.



To implement this scenario, do the following:

On Machine 1

Install the TIBCO ActiveMatrix BPM software and create a TIBCO ActiveMatrix Administrator server. To do this:

1. Install TIBCO ActiveMatrix BPM using the **Install BPM, Administrator & TIBCO Host** profile. See Running the TIBCO Configuration Tool on page 97 for details.

If you wish to enable secure sockets layer (SSL) for the communication channels on the HTTP connector used by TIBCO ActiveMatrix BPM, select Configure to Secure All Communication with SSL option when running the wizards in the TIBCO Configuration Tool before creating the second BPM node. The other BPM nodes then inherit the SSL configuration.

Note that the certificate that is provided in the "out-of-the-box" configuration (which has not been signed by a Certificate Authority (CA)) cannot be used in a high availability environment as it will not be accessible from both machines.

Ideally, you will install/provision your own CA signed certificate. See *TIBCO ActiveMatrix BPM Administration* guide for more information.

2. Using TIBCO Configuration Tool, run the **Create TIBCO ActiveMatrix Administrator Server** wizard to create a TIBCO ActiveMatrix Administrator server. See Create TIBCO ActiveMatrix Administrator Server Wizard Reference on page 35.

On Machine 2 or 3

Install a fully operational TIBCO ActiveMatrix BPM server. To do this:

1. Install TIBCO ActiveMatrix BPM using the **Install BPM, Administrator & TIBCO Host** profile, see Running the TIBCO Configuration Tool on page 97.
2. Using TIBCO Configuration Tool:
   a. Run the **Create TIBCO Host Instance** wizard to create a TIBCO Host. See Create TIBCO Host Instance Wizard Reference on page 30. From the **TIBCO Host Instance Configuration: Administrator Server** dialog, select **Bind this TIBCO Host instance with an existing Administrator server** box and enter the details of TIBCO ActiveMatrix Administrator server that you created on machine 1.
   b. Run the **Configure Third-Party Driver** wizard to register the JDBC drivers for your BPM database. See Configure Third-Party Driver Wizard Reference on page 29.
   c. Run the **Create TIBCO ActiveMatrix BPM Server** wizard. See Create TIBCO ActiveMatrix BPM Server Reference on page 145.
      —From the **Administrator Server Configuration: Details** dialog, in the **Server Name:** box, select Use existing ActiveMatrix Administrator

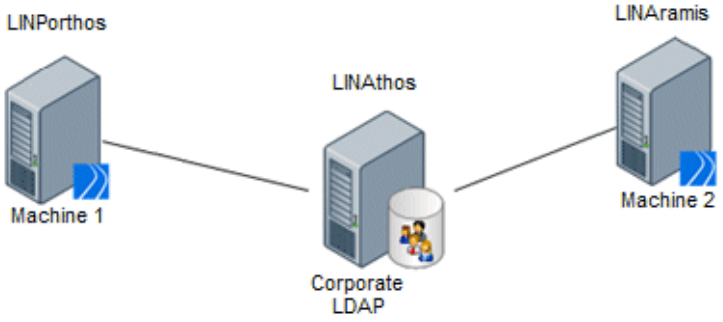
server and use the details of the TIBCO ActiveMatrix Administrator server you created on machine 1.

—From the **Administrator Server Configuration: TIBCO Host Configuration** dialog in the **Enterprise Name:** box, type the name and port number of the TIBCO Host on the machine where you created the TIBCO ActiveMatrix Administrator (in this scenario, machine 1).

Using Active-Active Clustering

Naming Assumptions for this Example

The following shows the names used for the machines in this example of a high availability, active-active cluster:



LINPorthos (Machine 1) contains:

- TIBCO ActiveMatrix Administrator System Node
- TIBCO ActiveMatrix BPM Node

LINAramis (Machine 2) contains:

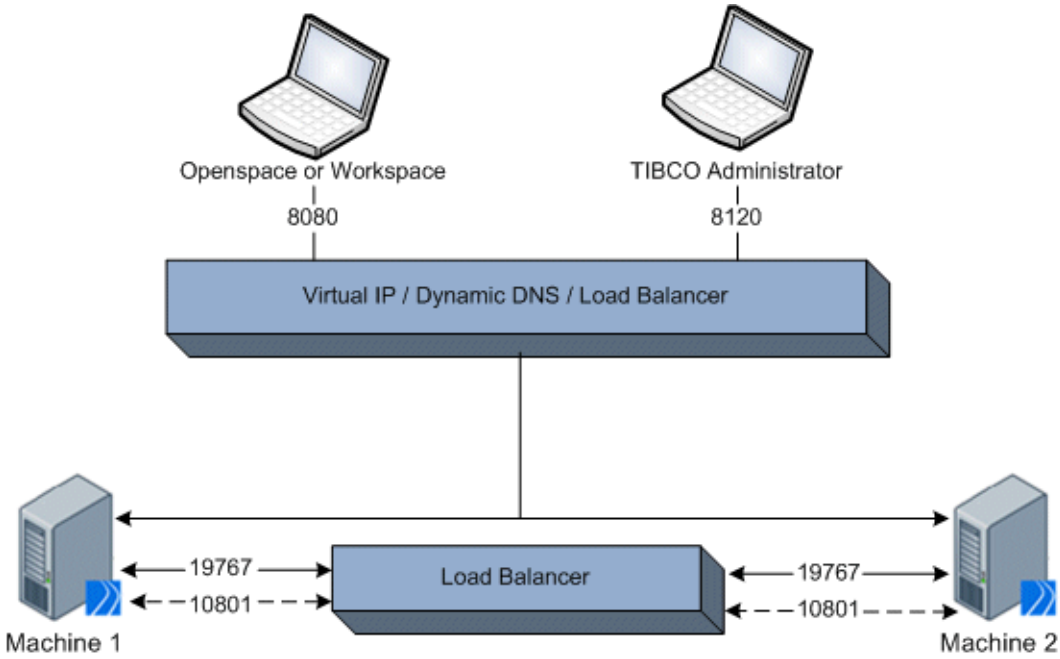
- TIBCO ActiveMatrix Administrator System Node Replica
- TIBCO ActiveMatrix BPM Node Replica

LINAthos contains:

- Corporate LDAP
- Oracle database
- Network File System (NFS)
- Load Balancer
- Enterprise Message Service (EMS)

Load Balancer

The following illustrates the configuration of the load balancer:



Ports

The following table lists the default ports used by each of the components:

Component	Default Port
Work Presentation	8080

Component	Default Port
TIBCO ActiveMatrix Administrator (external HTTP)	8120
Internal ADS	10801
Host Instance JMX	6051
BPM Node	6031
System Node	6021
Internal HTTP	19767
HSQL	1234
Credential Server	6041

The ports configured for the Work Presentation Component, TIBCO ActiveMatrix Administrator (external HTTP port), and the Internal HTTP port, need to be configured for load balancing across Machines 1 and 2.

If you are using the Internal LDAP Server provided with TIBCO ActiveMatrix BPM, port 10801 will also need to be added to the load balancer. If you are using a corporate or external LDAP, it should be configured in a highly available manner. LDAP is key to the proper functioning of TIBCO ActiveMatrix BPM (you will not be able to authenticate without it).

Replication

The approach taken to enable a highly available TIBCO ActiveMatrix Administrator and BPM environment is replication. It is important to note that while replication enables fault tolerance, it is a different concept than DR (Disaster Recovery) or a distributed environment. All components are replicated across multiple machines, thus enabling high-availability. It is also worth noting that this configuration is deployed in an active-active fashion, that is, load may be distributed between the various machines in the cluster, also offering a level of scalability.

A distributed BPM environment is a technique in which logical nodes are distributed to physical nodes to achieve horizontal scaling. For example, if processing is important, you may wish to distribute the Process Manager composite to multiple nodes, while Work Manager, for example, is distributed only to a single node. The ability to scale only the components that are relevant to the Business Process is the advantage of a distributed BPM environment.

Disaster Recovery on the other hand is really a different topic entirely and is the ability to recover from a catastrophic disaster. While replication may play a part in a disaster recovery plan, it is not the only concept that must be leveraged; an enterprise must have a business continuity plan in place that defines key metrics (for example, recovery point objective, recovery time, etc). These can then be taken into consideration for building a BPM and TIBCO ActiveMatrix infrastructure capable of being recovered in the event of a failure. For more information, see Disaster Recovery on page 27.

Pre-Installation

The following subsections describe pre-installation tasks that must be performed or taken into consideration.

Also note that this example assumes a UNIX-based installation.

Time Synchronization

All the servers in a highly available environment must have their time and date synchronized with each other. If the time is offset by even a few seconds, you may see one of following (or similar) messages in the `BPM.log` file. If you see a large number of such entries in the log, check that the time is synched on all the hosts in the highly available environment.

- `05 Jun 2011 14:12:02,465 [QuartzScheduler_PVM:Quartz Scheduler-LINAramis1307296618457_ClusterManager] [WARN] com.tibco.pvm.persist.quartz.jdbcjobstore.IpmQuartzJobStoreTX - This scheduler instance (LINAramis1307296618457) is still active but was recovered by another instance in the cluster. This may cause inconsistent behavior`
- `25 Jan 2012 01:33:48,698 [QuartzScheduler_PVM:Quartz Scheduler-mjkmssqlbe1327088686491_ClusterManager] [INFO ] com.tibco.pvm.persist.quartz.jdbcjobstore.IpmQuartzJobStoreTX - ClusterManager: Scanning for instance "threemjkv121327089184017"'s failed in-progress jobs.`
- `25 Jan 2012 01:33:56,200 [QuartzScheduler_PVM:Quartz Scheduler-mjkmssqlbe1327088686491_ClusterManager] [INFO ] com.tibco.pvm.persist.quartz.jdbcjobstore.IpmQuartzJobStoreTX - ClusterManager: detected 1 failed or restarted instances.`
- `30 Jan 2012 09:43:38,067 [QuartzScheduler_PVM:Quartz Scheduler-twomjkv121327596401015_ClusterManager] [WARN] com.tibco.pvm.persist.quartz.jdbcjobstore.IpmQuartzJobStoreTX - This scheduler instance (twomjkv121327596401015) is still active but was recovered by another instance in the cluster. This may cause inconsistent behavior.`

Shared File System

There must be a shared file system available to both machines that are mounted in identical locations. The following items will be stored on the shared file system:

- Shared Repository for TIBCO ActiveMatrix Administrator
- Shared Work Folder for TIBCO ActiveMatrix Administrator
- BPM Properties

- Internal LDAP Configuration (optional - held within the BPM directory)

[tibco@LINPorthos properties]$ pwd
/opt/tibco/properties
[tibco@LINPorthos properties]$ ls -la
total 20
drwxr-xr-x 5 tibco tibco 4096 Jun 23 19:44 .
drwxrwxrwx 10 tibco tibco 4096 Jun 23 15:22 ..
drwxrwxr-x 2 tibco tibco 4096 Jun 23 19:44 BPM
drwxrwxr-x 2 tibco tibco 4096 Jun 23 19:44 SharedRepo
drwxrwxr-x 2 tibco tibco 4096 Jun 23 19:44 SharedWork
[tibco@LINPorthos properties]$

- Keystores for SSL and WSS authentication. See *TIBCO ActiveMatrix BPM Administration* guide for details about enabling SSL and configuring TIBCO ActiveMatrix BPM to use SSO for authentication.

File Descriptors

The file descriptor hard limit for the TIBCO user should be 10000:

```
[tibco@LINAthos ~]$ ulimit -Hn
10000
```

Create a TIBCO ActiveMatrix Administrator Database

Create a TIBCO ActiveMatrix Administrator database and user in your database of choice. This should *not* be in the same tablespace as your BPM database.

The HSQL In-Process Database cannot be used for a production environment.

Other Pre-Requisites for High Availability

To achieve true High Availability / Fault Tolerance, the foundation technologies that TIBCO ActiveMatrix BPM and Platform rely on must be configured in a fault tolerant manner as well. This includes EMS, Database, Shared File System, and LDAP. You lose the gains of having a fault tolerant system, if the technologies that it relies on are not fault tolerant as well.

Check for LBNs (Late Breaking News)

Be sure that you have checked for all LBNs for both TIBCO ActiveMatrix BPM and the Platform on support.tibco.com.

Installing the Product

This procedure assumes that non-secure HTTP communications are used throughout. The procedure may fail if any of the components are configured to use the secure HTTPS communication.

Task A Install The Base Software on Machine 1 and Machine 2

Each machine in the cluster will act as both a replicated TIBCO ActiveMatrix Administrator and a replicated BPM node. Hence, both the machines must have all of the products installed so that they may be distributed via either TIBCO ActiveMatrix Administrator.

Install TIBCO ActiveMatrix BPM using the **Install BPM, Administrator & TIBCO Host** profile on both the machines. See Installing the Product on page 46 for details.

- If installing on a production server, use the **Customize Installation** check box to uncheck the TIBCO ActiveMatrix BPM Documentation.
- Install the product in the same directory structure on both machines.
- Do not run the TCT (TIBCO Configuration Tool) yet.

Task B Install Any Hotfixes

Install any hotfixes available for the TIBCO ActiveMatrix Platform or TIBCO ActiveMatrix BPM.

Task C Create Shared Directories

Create three directories on the shared file system on which the TIBCO user has read and write permissions.

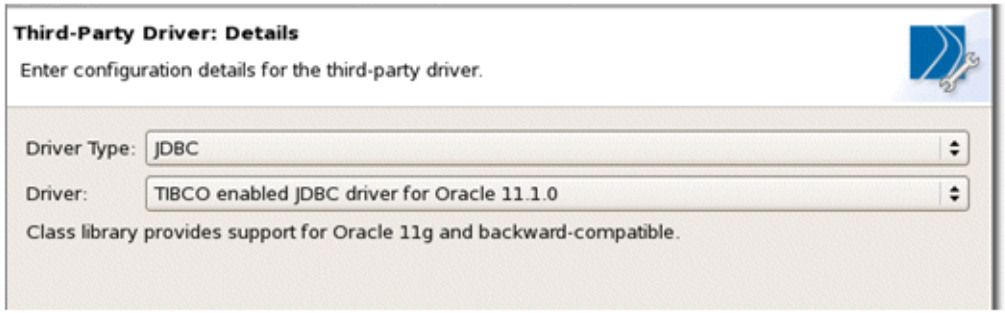
- BPM
- SharedRepo
- SharedWorkFolder

Create a TIBCO ActiveMatrix Administrator on Machine 1

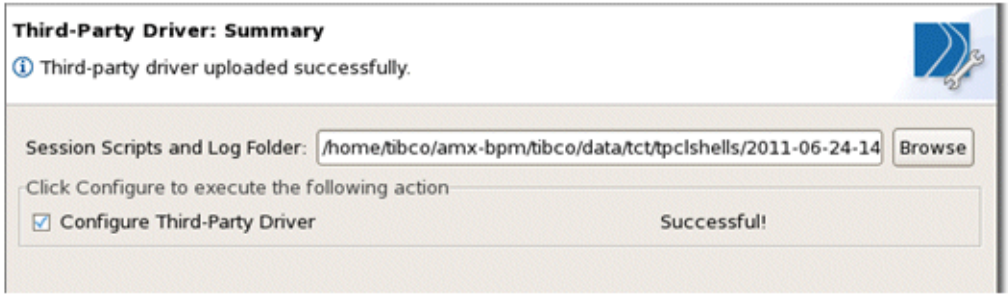
Perform the following tasks on Machine 1 to create a TIBCO ActiveMatrix Administrator.

Task A Configure the JDBC Driver

1. Using the TIBCO Configuration Tool (TCT), select **Configure Third-Party Driver**.
2. On the **Third-Party Driver: Details** dialog, select the following:


Third-Party Driver: Details
Enter configuration details for the third-party driver.
Driver Type:
JDBC
Driver:
TIBCO enabled JDBC driver for Oracle 11.1.0
Class library provides support for Oracle 11g and backward-compatible.

3. On the **Third-Party Driver: JAR Folder** dialog, select the directory containing the JDBC driver and then click on **Finish**.
4. On the **Third-Party Driver: Summary** dialog, enter or browse to the appropriate directory, and select the **Configure Third-Party Driver** box:



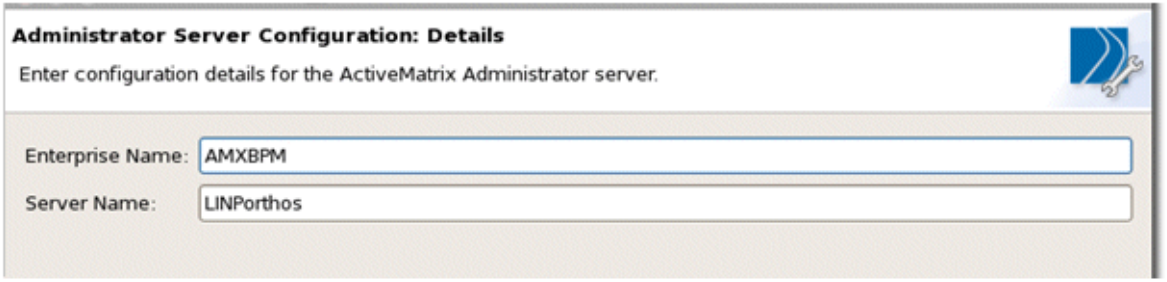
Note that the **Session Scripts and Log Folder** field is prefilled with the default location; you can change this location, if desired.

Click **Configure** to configure the third-party driver.

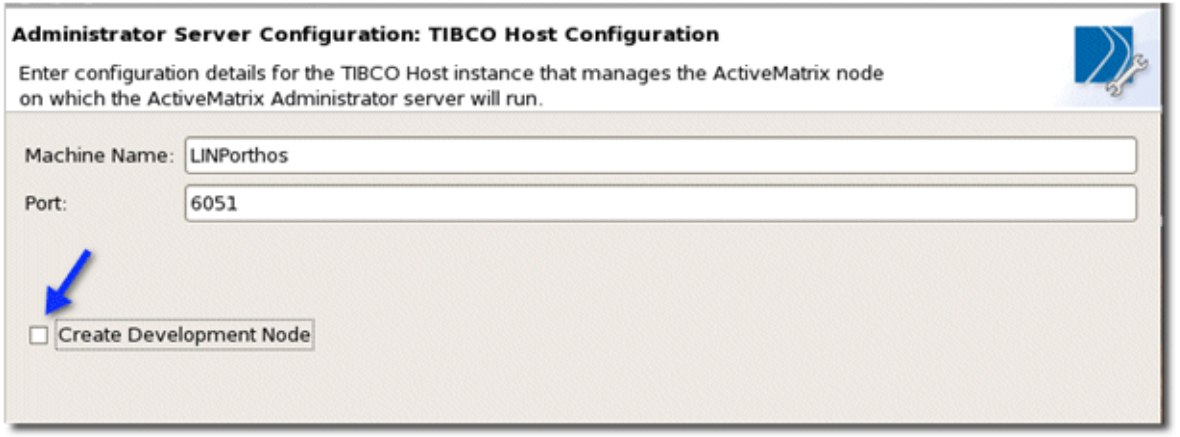
Task B Configure TIBCO ActiveMatrix Administrator Server

1. Using the TIBCO Configuration Tool (TCT), select **Create TIBCO ActiveMatrix Administrator Server - V3.1**.

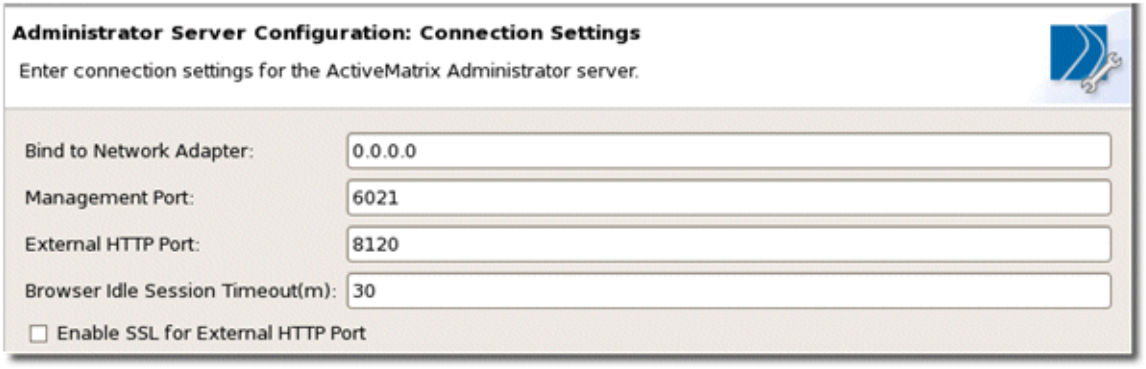
2. On the **Administrator Server Configuration: Details** dialog, enter the following:



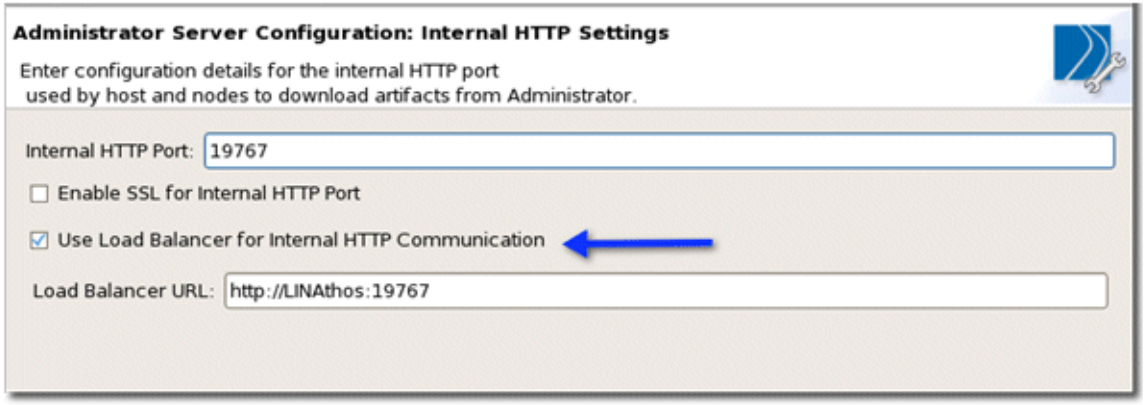
3. On the **Administrator Server Configuration: TIBCO Host Configuration** dialog, enter the following. Also, uncheck the **Create Development Node** box:


Administrator Server Configuration: TIBCO Host Configuration
Enter configuration details for the TIBCO Host instance that manages the ActiveMatrix node on which the ActiveMatrix Administrator server will run.
Machine Name:
LINPorthos
Port:
6051
Create Development Node

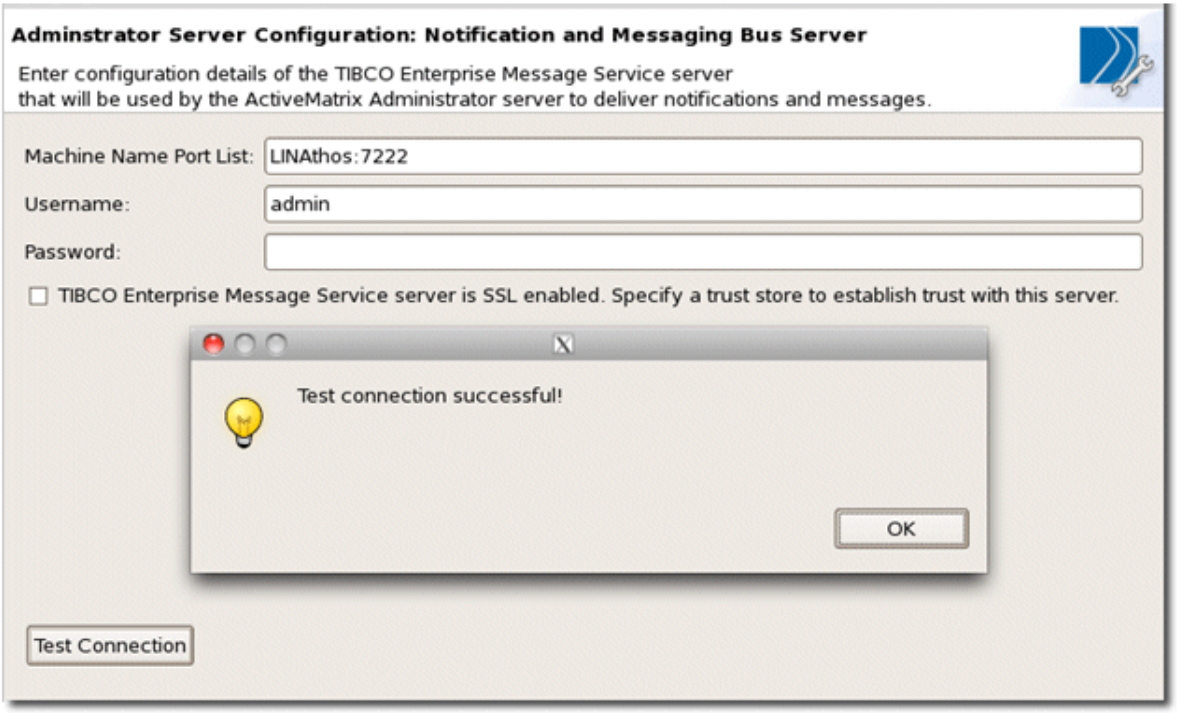
4. On the **Administrator Server Configuration: Connection Settings** dialog, enter the following:



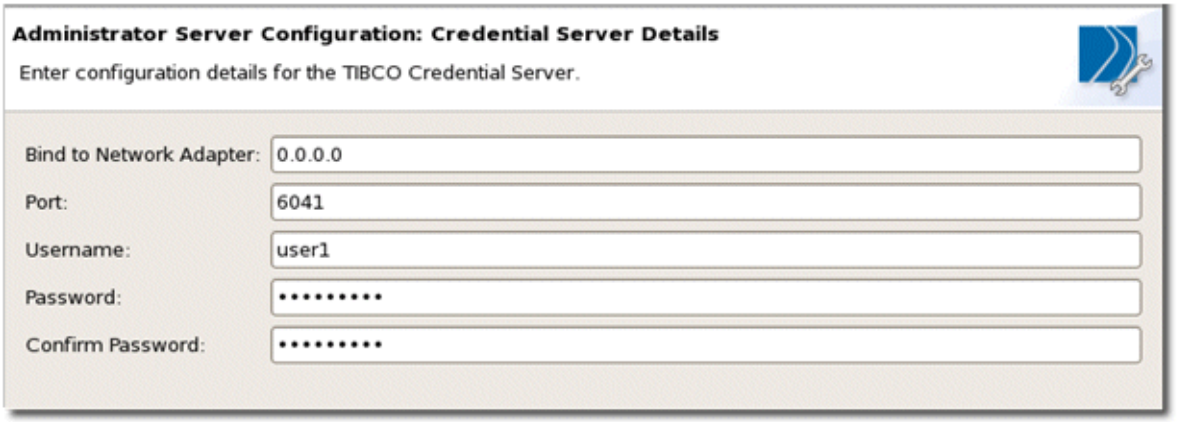
5. On the **Administrator Server Configuration: Internal HTTP Settings** dialog:
   a. Enter the URL for the Internal HTTP Port that was configured on the load balancer. Depending on the configuration and behavior of the load balancer, Machine 2 may need to be temporarily removed from the pool (until it is installed with the replica TIBCO ActiveMatrix Administrator later).
   b. Check **Use Load Balancer for Internal HTTP Communication**.


Administrator Server Configuration: Internal HTTP Settings
Enter configuration details for the internal HTTP port
used by host and nodes to download artifacts from Administrator.
Internal HTTP Port:
19767
Enable SSL for Internal HTTP Port
Use Load Balancer for Internal HTTP Communication
Load Balancer URL:
http://LINAthos:19767

6. On the **Administrator Server Configuration: Notification and Messaging Bus Server** dialog, enter the following, then click the **Test Connection** button to ensure you can get a successful connection:

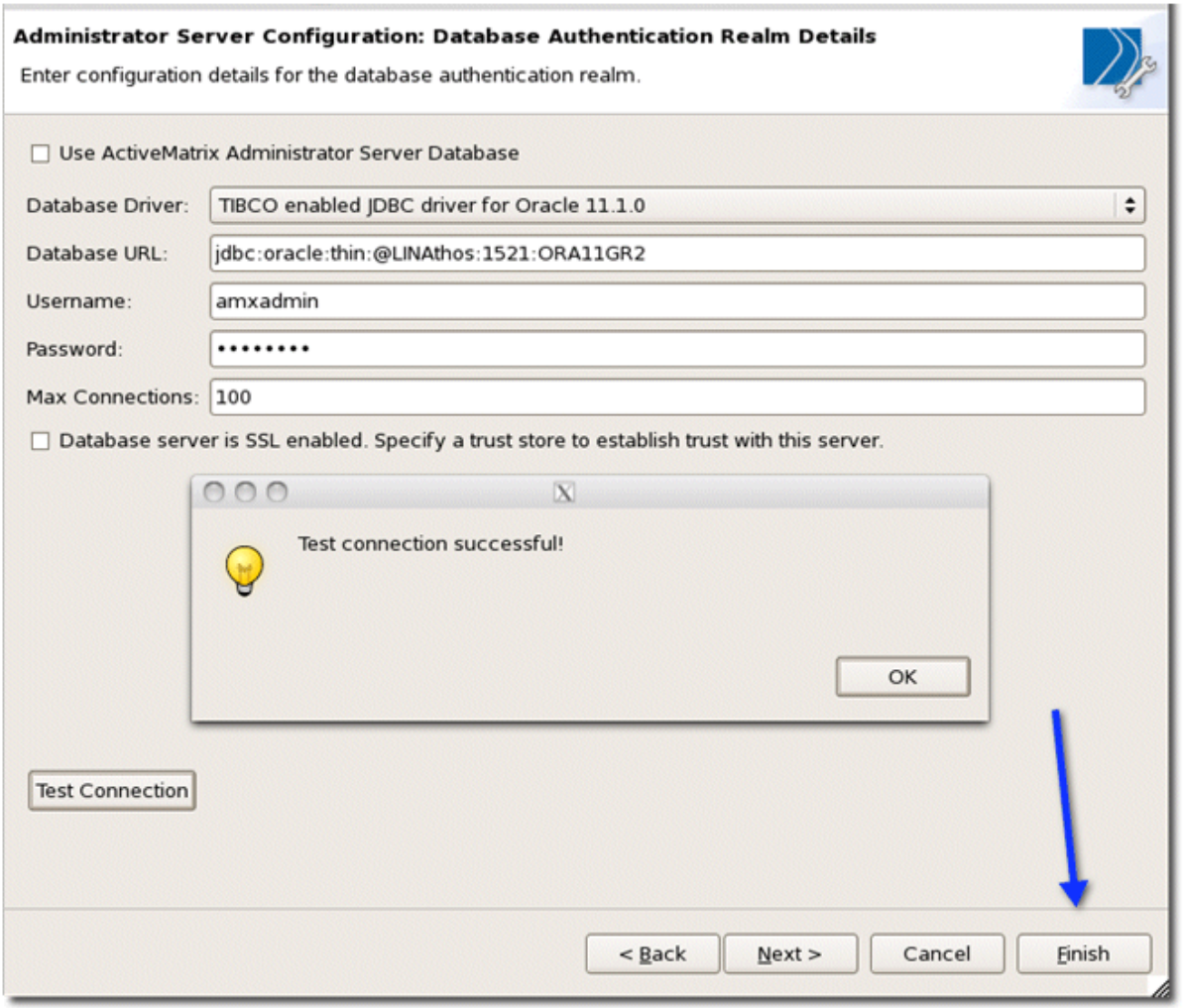

Adminstrator Server Configuration: Notification and Messaging Bus Server
Enter configuration details of the TIBCO Enterprise Message Service server
that will be used by the ActiveMatrix Administrator server to deliver notifications and messages.
Machine Name Port List:
LINAthos:7222
Username:
admin
Password:
TIBCO Enterprise Message Service server is SSL enabled. Specify a trust store to establish trust with this server.
Test connection successful!
OK
Test Connection

7. On the **Administrator Server Configuration: Credential Server Details** dialog, enter the following (leave the network adapter at 0.0.0.0 so that it can bind to all network interfaces):

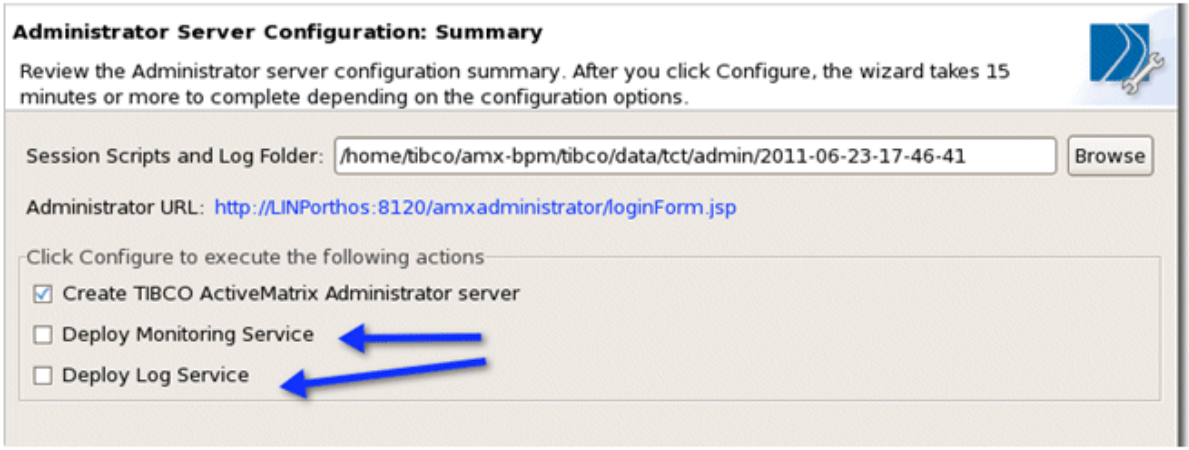


Do not use the Default In-Process Database. This database and user need to be pre-created and empty. It will not create the user, nor drop tables made by previous installs.

8. On the **Administrator Server Configuration: Database Authentication Realm Details** dialog:
   a. select/enter the following information,
   b. click the **Test Connection** button to ensure you can successfully connect,
   c. click **Finish:**



9. On the **Administrator Server Configuration: Summary** dialog:
   a. uncheck **Deploy Monitoring Service**,
   b. uncheck **Deploy Log Service**,
   c. click **Save** to save the Ant scripts for this configuration:


Administrator Server Configuration: Summary
Review the Administrator server configuration summary. After you click Configure, the wizard takes 15 minutes or more to complete depending on the configuration options.
Session Scripts and Log Folder:
/home/tibco/amx-bpm/tibco/data/tct/admin/2011-06-23-17-46-41
Browse
Administrator URL: http://LINPorthos:8120/amxadministrator/loginForm.jsp
Click Configure to execute the following actions
Create TIBCO ActiveMatrix Administrator server
Deploy Monitoring Service
Deploy Log Service

10. Close the TIBCO Configuration Utility (do not have TCT do the configuration).

Task C Edit Configuration Scripts

Perform the following steps on Machine 1:

1. Change directories to `CONFIG_HOME/tct/admin/date-time/scripts`.

```
[tibco@LINPorthos scripts]$ pwd
/home/tibco/amx-bpm/tibco/data/tct/admin/2011-06-23-17-46-41/scripts
[tibco@LINPorthos scripts]$ ls
admin-envt-data.xml                 data.xml
admin-instance.properties           governance_integration_data.xml
admin-tibcohost-instance.properties hpa-log4j.xml_template
build.properties                    integration_create_admin_data.xml
build.xml                           log-config-override.properties
cl_logservice_data.xml              node-log4j.xml_template
cl_payloadservice_data.xml
[tibco@LINPorthos scripts]$
```

2. Edit the `integration_create_admin_data.xml` file:

   a. Set the `sharedWorkFolder` attribute of the `AdminConfigFolders` element to a folder in the shared file system. For example:

   ```
   <AdminConfigFolders
   instanceWorkFolder="/home/tibco/amx-bpm/WorkFolder"
   sharedWorkFolder="/opt/tibco/properties/SharedWorkFolder"
   productStagingFolder="${TIBCO_HOME}"/>
   ```

   b. Set the `location` attribute of the `SCMDetails` element to the same value as `sharedWorkFolder` attribute.

   ```
   <SCMDetails type="filesystem"
   location="${admin.enterprise.dir}/shared/repo"/>
   ```

   For example:

   ```
   <SCMDetails type="filesystem"
   location="/opt/tibco/properties/SharedWorkFolder"/>
   ```

   c. Set value of the `Svar` element named `ArtifactServerInternalSharedLocationSvar` to the same value as `sharedWorkFolder` attribute.

   ```
   <SVar description="admin shared folder svar" type="String"
   name="ArtifactServerInternalSharedLocationSvar"
   xsi:type="amxdata_base:SubstitutionVariable"
   value="${tibco.config.mgmt.home}/admin/${admin.enterprise.na
   me}/shared"/>
   ```

   For example:

   ```
   <SVar description="admin shared folder svar" type="String"
   name="ArtifactServerInternalSharedLocationSvar"
   xsi:type="amxdata_base:SubstitutionVariable"
   value="/opt/tibco/properties/SharedWorkFolder"/>
   ```

   d. Save the file.

Create a TIBCO ActiveMatrix Administrator on Machine 1

Perform the following steps on Machine 1 to create a TIBCO ActiveMatrix Administrator:

Task A Edit build.xml

3. Remove "deploy-mcr" and "`deploy-commonlogging`" from the end-to-end target:

   Change:

```
<target name="end-to-end" depends="admin-full-setup,
deploy-mcr, deploy-commonlogging"/>
```

To:

```
<target name="end-to-end" depends="admin-full-setup"/>
```

Task B Run Ant Scripts

1. Before executing the Ant scripts, increase the heap size for Ant:

   ```
   export ANT_OPTS=-Xmx1024m
   ```

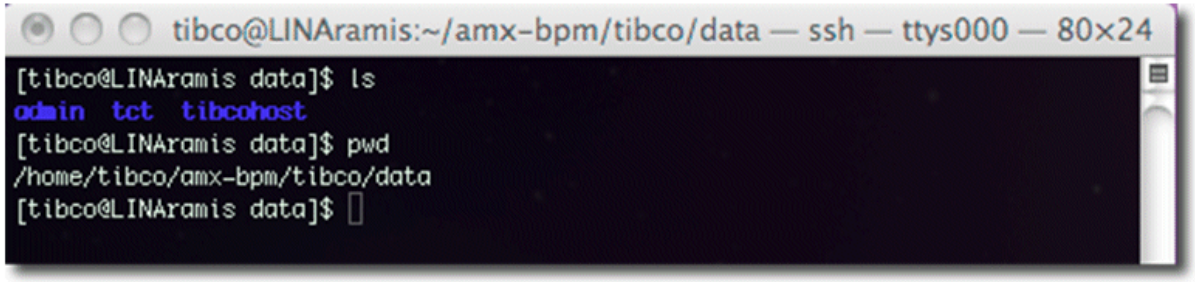
2. From the **scripts** directory, launch Ant (there is a version included in the **amx-bpm** installation folder):

   ```
   /opt/tibco/amx-bpm/tibcojre64/1.6.0/bin/java -cp
   /opt/tibco/amx-bpm/tools/lib/antpackage.jar
   org.apache.tools.ant.launch.Launcher
   ```

   Note that you can use your own installation of Ant to run the scripts (currently, the supported version is 1.7.1; note that version 1.8 cannot be used).

Task C Copy Configuration Directory

1. Copy the CONFIG_HOME directory from Machine 1 to Machine 2, in the same location. The two directories within the CONFIG_HOME that are required are **admin** and **tct**.
2. On Machine 2, delete the **tibcohost** directory from the CONFIG_HOME copy.



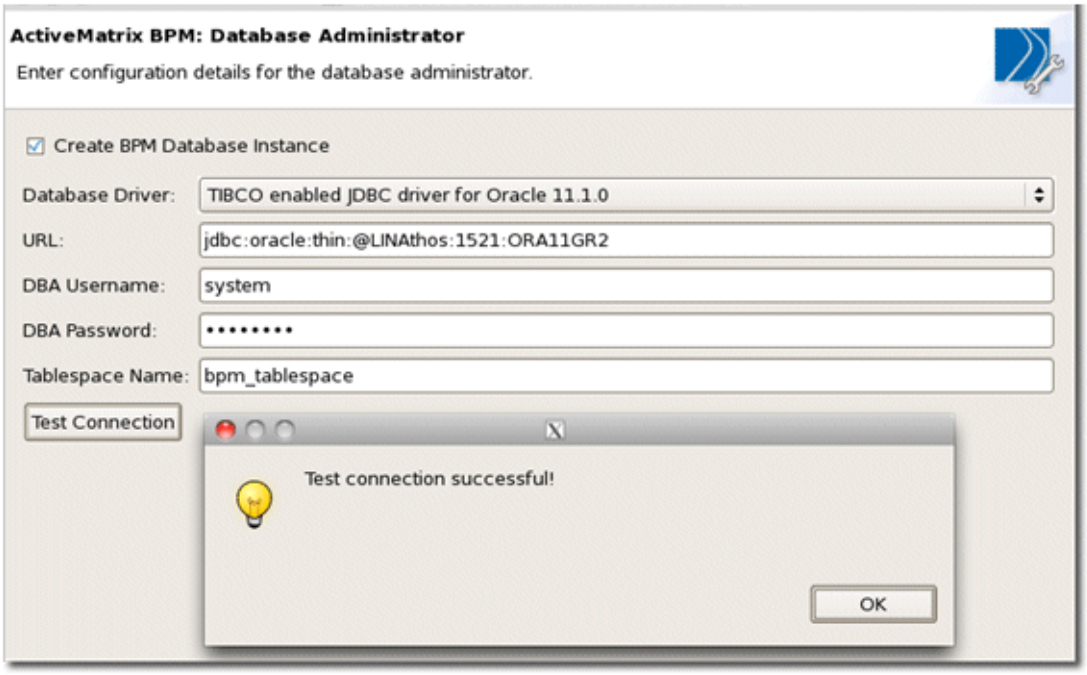
Create a TIBCO ActiveMatrix BPM Server on Machine 1

Perform the following tasks on Machine 1 to create a TIBCO ActiveMatrix BPM Server.

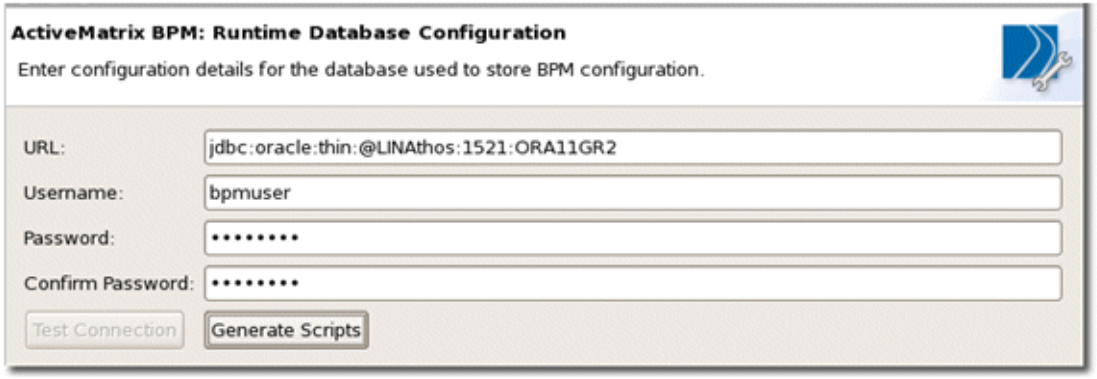
Task A Create a TIBCO ActiveMatrix BPM Server

1. Using the TIBCO Configuration Tool (TCT), select **Create TIBCO ActiveMatrix BPM Server - V1.3**.

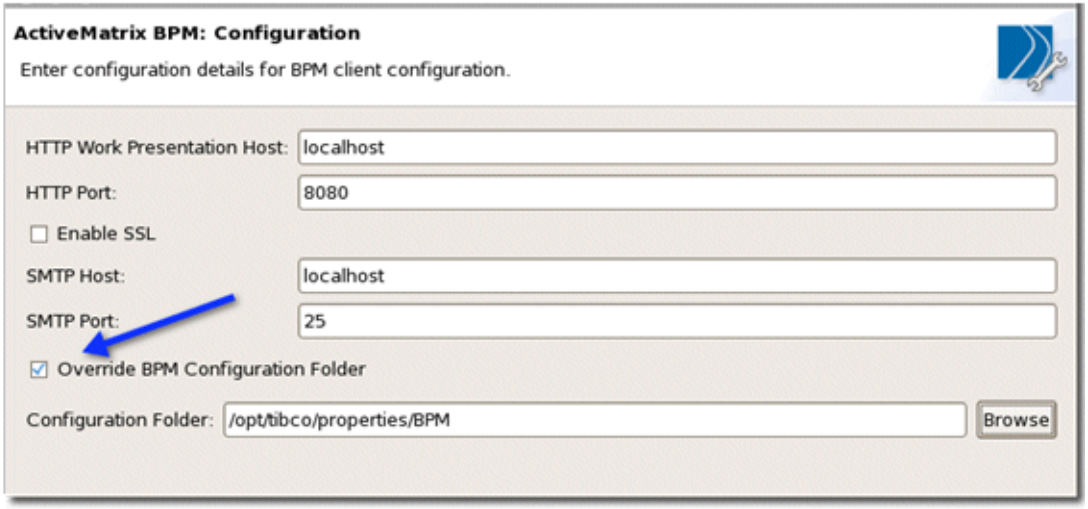
2. On the **ActiveMatrix BPM: Database Administrator** dialog, select/enter the following, then click the **Test Connection** button to ensure you can successfully connect:



3. On the **ActiveMatrix BPM: Runtime Database Configuration** dialog, enter the following:



4. On the **ActiveMatrix BPM: Configuration** dialog:
   a. enter the following information,
   b. check the **Override BPM Configuration Folder** box,
   c. in the **Configuration Folder** field, enter the **BPM** folder from the shared file system.

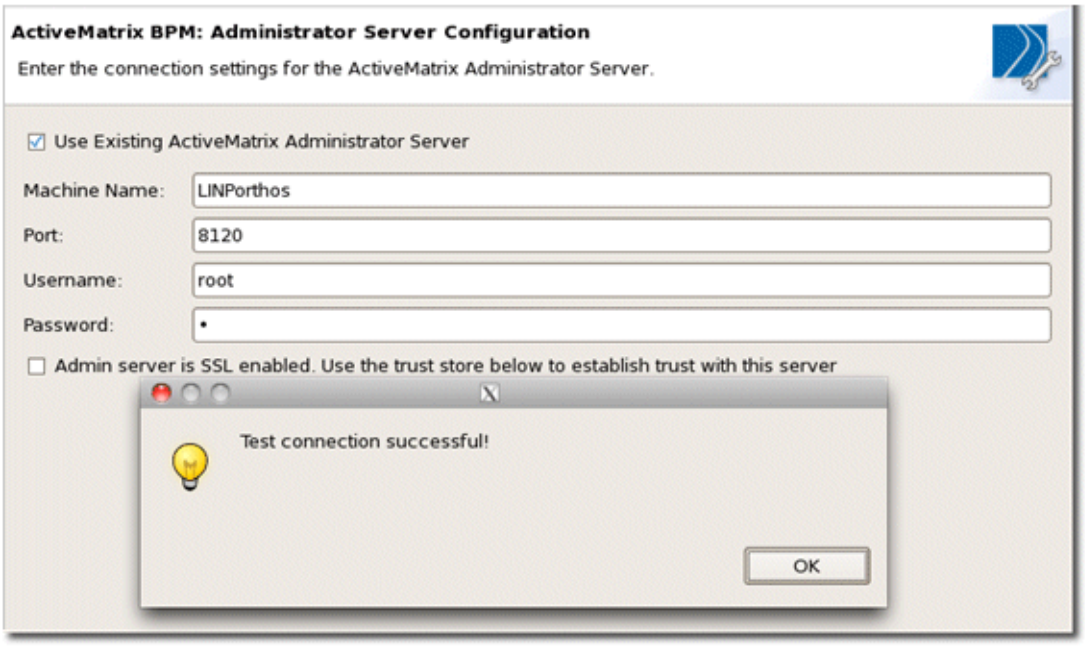


   d. Optionally, check the **Enable SSL** box to enable Secure Sockets Layer (SSL) communication channels between your BPM runtime clients (i.e., Openspace or Workspace) and the BPM nodes (the other BPM nodes will then inherit the SSL configuration).

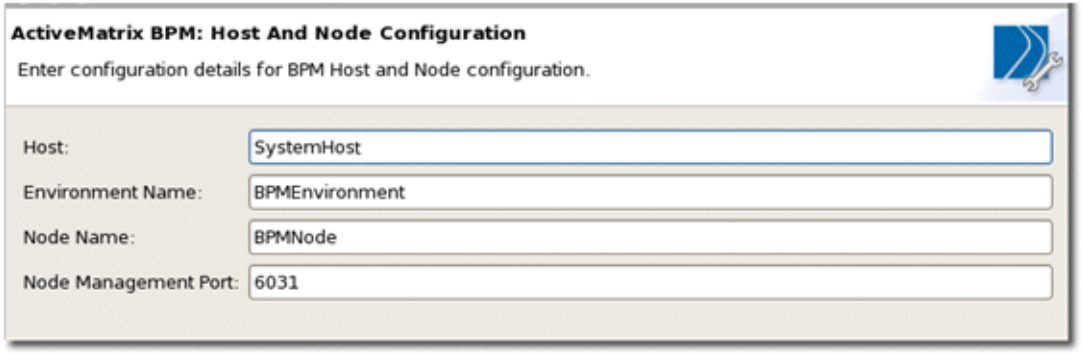
      Note that the certificate that is provided in the "out-of-the-box" configuration (which has not been signed by a Certificate Authority (CA)) cannot be used in a high availability environment as it will not be accessible from both machines.

      Ideally, you will install/provision your own CA signed certificate. See *TIBCO ActiveMatrix BPM Administration* guide for more information.

5. On the **ActiveMatrix BPM: Administrator Server Configuration** dialog:
   a. check the **Use Existing ActiveMatrix Administrator Server** box,
   b. complete the remaining fields,
   c. click the **Test Connection** button to ensure you can successfully connect.



6. On the **ActiveMatrix BPM: Host and Node Configuration** dialog, enter the following:



7. Click **Finish**, and then click '**Configure**' to create the ActiveMatrix BPM Server.

Create a TIBCO ActiveMatrix Administrator Replica on Machine 2

Perform the following steps on Machine 2 to create a replica TIBCO ActiveMatrix Administrator.

Task A Edit the instance-mgmt.xml File

1. Open the following file:

   ```
   TIBCO_HOME/administrator/3.1/scripts/instance-mgmt.xml
   ```

2. Locate the "deploy-admin" target, and remove "configure.tcs" and "start.tcs" from the **depends** attribute. For example:

   Change:

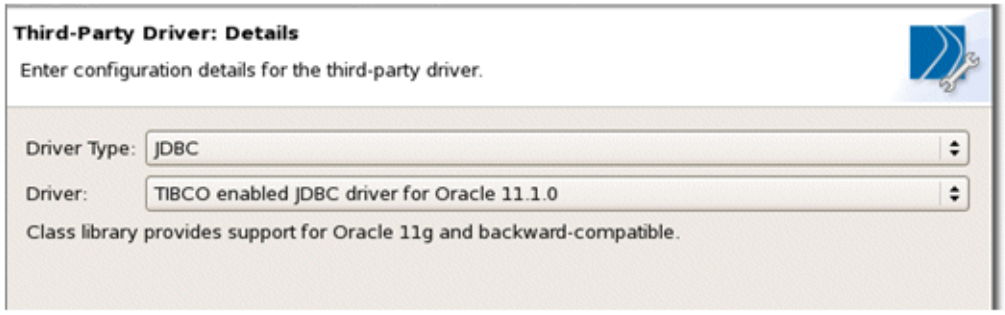
   ```
   <target name="deploy-admin" depends="-define-macros,
   create-dir-structure, bootstrap.admin.archive.th,
   configure.tcs, start.tcs, updateCallbackUrlTrustConfig,
   create.admin.cli.keystore, install.artifact.server,
   deploy.admin.ui.dashboard"/>
   ```

   To:

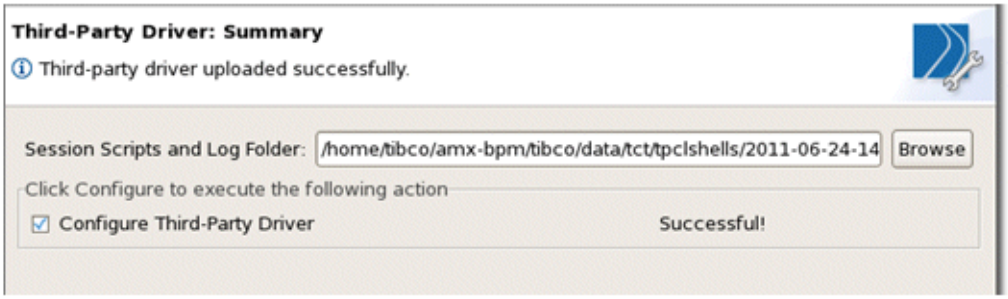
   ```
   <target name="deploy-admin" depends="-define-macros,
   create-dir-structure, bootstrap.admin.archive.th,
   updateCallbackUrlTrustConfig, create.admin.cli.keystore,
   install.artifact.server, deploy.admin.ui.dashboard"/>
   ```

Task B Configure the JDBC Driver

1. Using the TIBCO Configuration Tool (TCT), select **Configure Third-Party Driver**.
2. On the **Third-Party Driver: Details** dialog, select the following:


Third-Party Driver: Details
Enter configuration details for the third-party driver.
Driver Type:
JDBC
Driver:
TIBCO enabled JDBC driver for Oracle 11.1.0
Class library provides support for Oracle 11g and backward-compatible.

3. On the **Third-Party Driver: JAR Folder** dialog, select the directory containing the JDBC driver and then click on **Finish**.
4. On the **Third-Party Driver: Summary** dialog, enter or browse to the appropriate directory for the logs, and select the **Configure Third-Party Driver** box:



Note that the **Session Scripts and Log Folder** field is prefilled with the default location; you can change this location, if desired.

Click **Configure** to configure the third-party driver.

Task C Edit the governance_integration_build.xml File

1. Open the following file:

   ```
   TIBCO_HOME/administrator/3.1/scripts/governance/governance_integration_build.xml
   ```

2. Locate the "setup" target, and remove "add.factory.aggregator.config " from the **depends** attribute. For example:

   Change:

   ```
   <target name="setup" depends="create.rt,
   provision.mcr.aggr.node, create.ri, install.ri, add.appender,
   init.govcommon, init.mcr, add.factory.aggregator.config,
   deploy.aggr.app"/>
   ```

   To:

   ```
   <target name="setup" depends="create.rt,
   provision.mcr.aggr.node, create.ri, install.ri, add.appender,
   init.govcommon, init.mcr, deploy.aggr.app"/>
   ```

Task D Edit Ant Scripts

Ensure that you are using a copy of the Machine 1 configuration data that was saved before installing the BPM runtime.

1. Change directories to:

   CONFIG_HOME/tct/admin/*date-time*/scripts

   For example:

   ```
   [tibco@LINAramis scripts]$ pwd
   /home/tibco/amx-bpm/tibco/data/tct/admin/2011-06-23-17-46-41/scripts
   ```

2. Open the `admin-envt-data.xml` file and comment out the **Environment** element. For example:

   ```
   <!-- Environment description="Development environment"
   xsi:type="amxdata:Environment" name="DevEnvironment">
       <Node contact="TIBCO" description="Development node"
   xsi:type="amxdata:Node" hostName="SystemHost" name="DevNode"
   portNumber="6031"/>
       <Host name="SystemHost"/>
       <Application description="TIBCO ActiveMatrix Mediation
   Implementation Type" contact="TIBCO Software Inc."
   name="com.tibco.amx.it.mediation.app"
   xsi:type="amxdata:Application">
         <Node name="DevNode" environmentName="DevEnvironment"/>
        <ApplicationTemplate name="com.tibco.amx.it.mediation.apt"
   xsi:type="amxdata_reference:ApplicationTemplate_reference"/>
       </Application>
     </Environment-->
   </amxdata_base:Enterprise>
   ```

3. Open the `build.properties` file and replace the hostname in the **th.jmx.host**, **th.jmx,url**, and **admin.instance.name** entries with Machine 2's hostname. (Note that if you did not remove the `tibcohost` directory in CONFIG_HOME as mentioned in Copy Configuration Directory on page 71, your build will fail, stating that the instance already exists.)

   For example, change:

   ```
   # Administrator Server Configuration: Details
   admin.enterprise.name=AMXBPM

   # Administrator Server Configuration: TIBCO Host Configuration
   th.jmx.host=LINPorthos
   ```

   To:

   ```
   # Administrator Server Configuration: Details
   admin.enterprise.name=AMXBPM

   # Administrator Server Configuration: TIBCO Host Configuration
   th.jmx.host=LINAramis
   ```

4. Ensure the **tcs.host** entry in `build.properties` is set to 0.0.0.0:

```
# Administrator Server Configuration: Credential Server Details
tcs.host=0.0.0.0
```

5. Open the `cl_logservice_data.xml` file and replace all instances of *SystemNode* with *SystemNodeReplica*.

```
:%s/SystemNode/SystemNodeReplica/g
```

6. Open the `cl_payloadservice_data.xml` file and replace all instances of *SystemNode* with *SystemNodeReplica*.

```
:%s/SystemNode/SystemNodeReplica/g
```

7. Open the `governance_integration_data.xml` file and replace all instances of *SystemNode* with *SystemNodeReplica*.

```
:%s/SystemNode/SystemNodeReplica/g
```

8. Open the `integration_create_admin_data.xml` file and replace all instances of *SystemNode* with *SystemNodeReplica* and *SystemHost* with *SystemHostReplica*.

```
:%s/SystemNode/SystemNodeReplica/g
:%s/SystemHost/SystemHostReplica/g
```

9. Open the `admin-instance.properties` file and change **adminURL** to include Machine 2's hostname. For example:

```
# AMX Administrator instance specific properties
adminURL=http://LINAramis:8120
username=root
```

Task E Run Ant Scripts

1. Before executing the Ant scripts increase the heap size for Ant.

```
export ANT_OPTS=-Xmx1024m
```

2. From the **scripts** directory launch Ant (there is a version included in the **amx-bpm** installation folder):

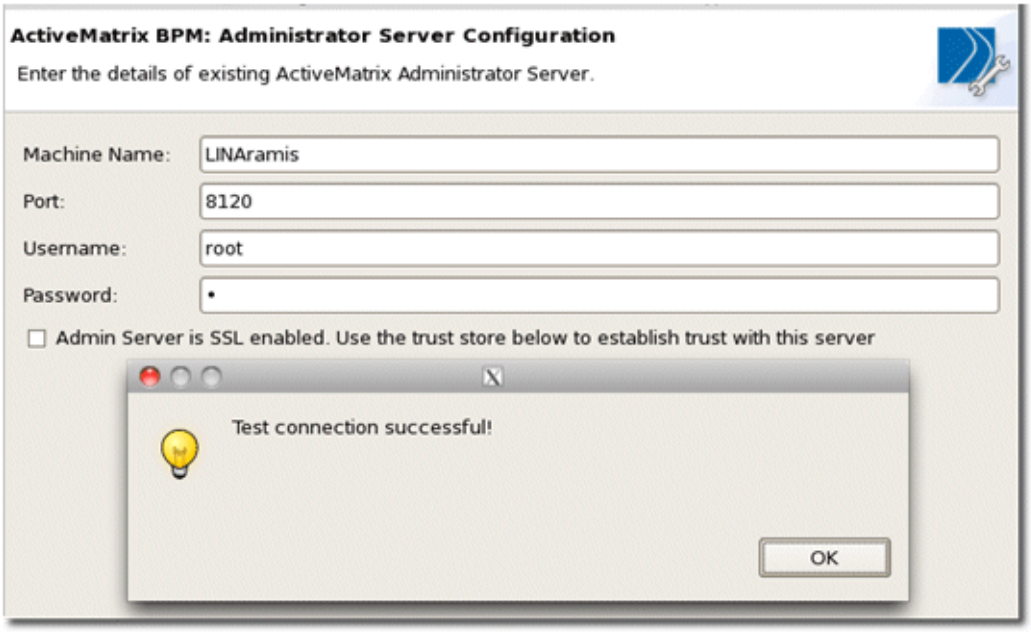
```
/opt/tibco/amx-bpm/tibcojre64/1.6.0/bin/java -cp
/opt/tibco/amx-bpm/tools/lib/antpackage.jar
org.apache.tools.ant.launch.Launcher
```

Create a TIBCO ActiveMatrix BPM Server Replica on Machine 2

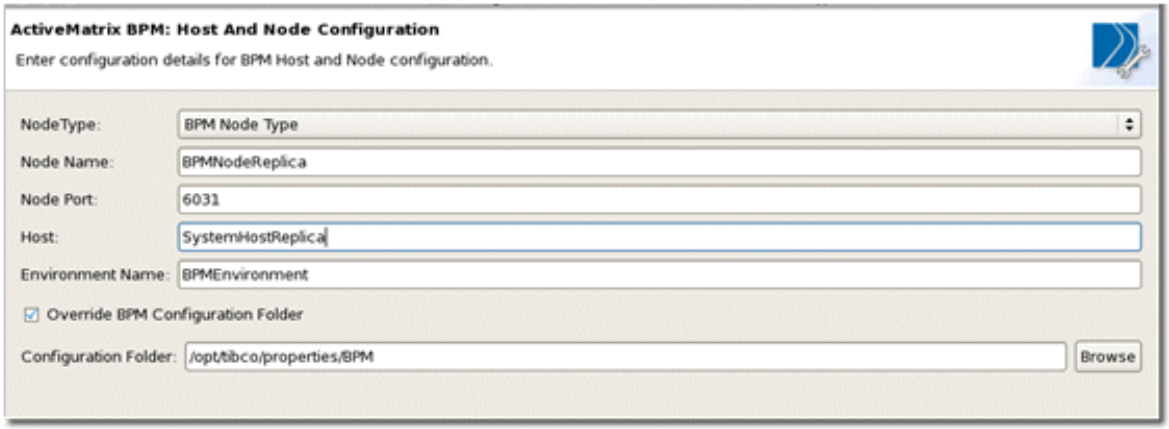
Perform the following tasks on Machine 2 to create a replica TIBCO ActiveMatrix BPM Server (LINAramis in our example).

Task A Configure a TIBCO ActiveMatrix BPM Server Node Type

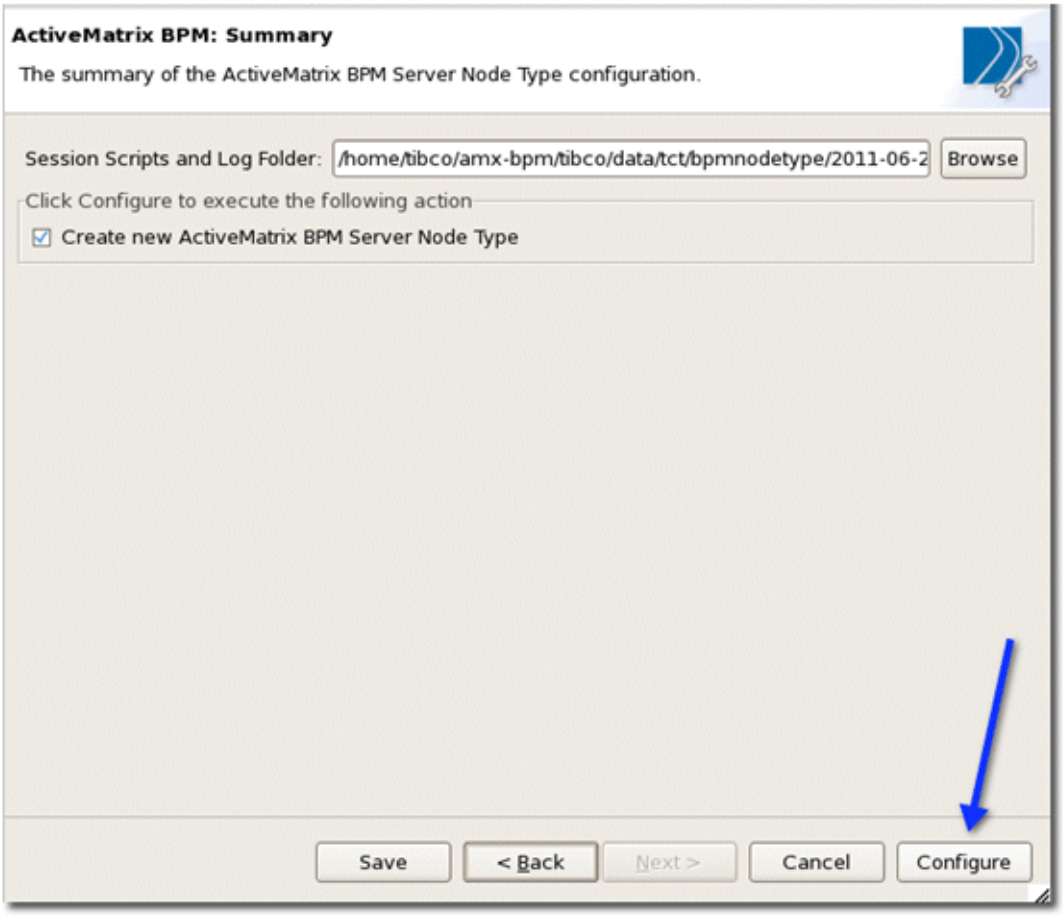
1. Using the TIBCO Configuration Tool (TCT) from Machine 1, select **Configure TIBCO ActiveMatrix BPM Server Node Type - V1.3**.
2. On the **ActiveMatrix BPM: Administrator Server Configuration** dialog, enter the following, then click **Test Connection** to ensure you can successfully connect:



3. On the **ActiveMatrix BPM: Host and Node Configuration** dialog:
   a. change the Node Name to BPMNodeReplica,
   b. change the Host to SystemHostReplica,
   c. check the **Override the BPM Configuration Folder** box, and
   d. in the **Configuration Folder** field, enter the same directory on the Shared File System that was used for the first BPM Server (see Create a TIBCO ActiveMatrix BPM Server on Machine 1 on page 71).



4. On the **ActiveMatrix BPM: Summary** dialog, enter the following, then click **Configure**:


ActiveMatrix BPM: Summary
The summary of the ActiveMatrix BPM Server Node Type configuration.
Session Scripts and Log Folder:
/home/tibco/amx-bpm/tibco/data/tct/bpmnodetype/2011-06-2
Browse
Click Configure to execute the following action
Create new ActiveMatrix BPM Server Node Type
Save
< Back
Next >
Cancel
Configure

Distribute ActiveMatrix BPM Applications

Perform the following to distribute the ActiveMatrix BPM components:

1. Log into TIBCO ActiveMatrix Administrator (you can log in on either machine, or through the load balancer).
2. Distribute the following applications to BPMNode and BPMNodeReplica:
   - amx.bpm.app
   - amx.bpm.auth.system
   - amx.bpm.auth.easyAs
   - amx.bpm.auth.wss.asp
   - amx.bpm.apacheds

   a. In the **Applications** pane, click on the application,

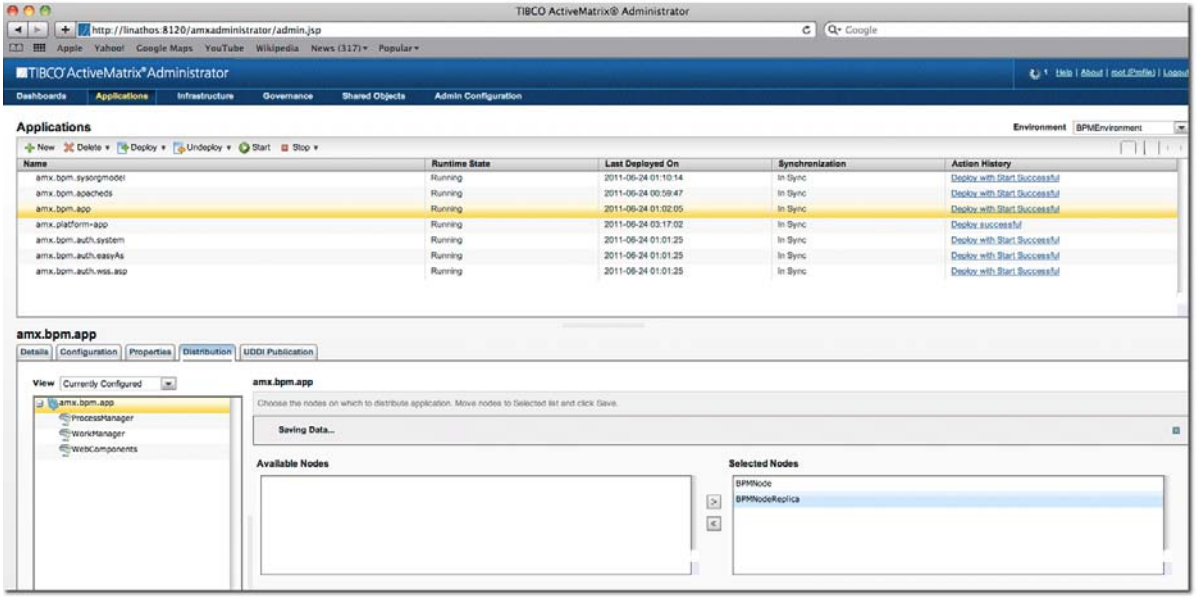
   b. in the lower pane, click on the **Distribution** tab,

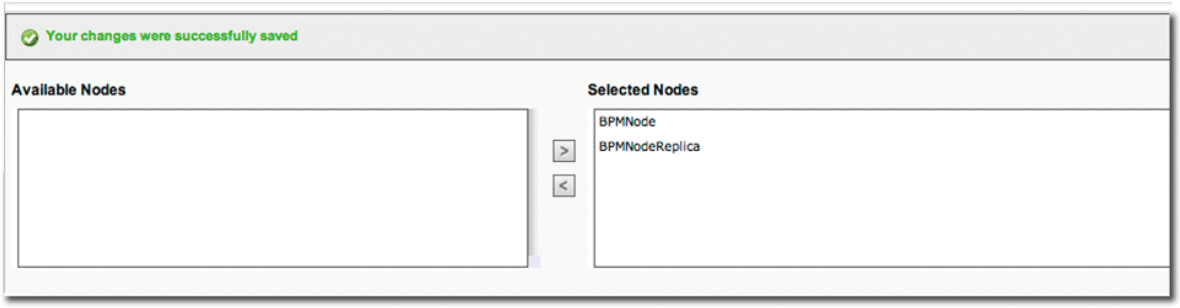
   c. in the **Available Nodes** section, select **BPMNodeReplica** and add it to the **Selected Nodes** section,

   d. click **Save**,

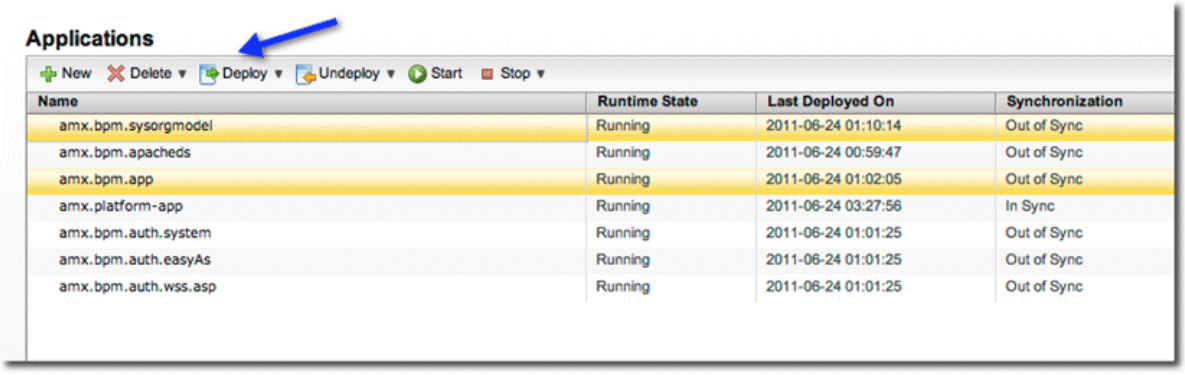
   e. click **Apply**, then refresh the application list.

   The nodes should appear "Out of Sync".





3. In the **Applications** panel, select both **amx.bpm.app** and **amx.bpm.sysorgmodel** and click **Deploy**. When they have been fully deployed to your BPMNodeReplica node (that is, they are shown as being "In Sync" and "Running", not "Partially Running"), deploy **amx.bpm.auth.*** and **amx.bpm.apacheds**. (Note that this can take quite some time, depending on the system load.)



Edit LDAP Shared Resources

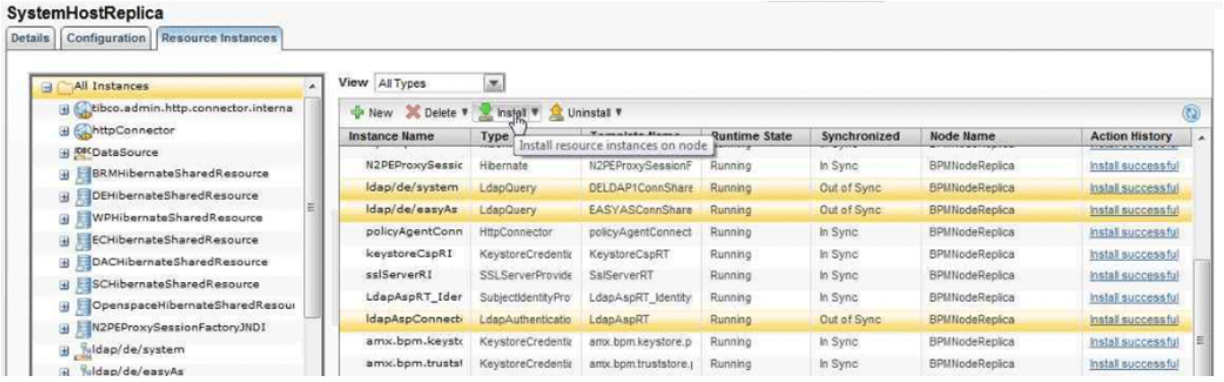
If you are using the internal Apache DS instance, you are also required to edit the LDAP shared resources to reflect the load balancer hostname, as opposed to a single machine. This is required to ensure that either instance of Apache DS is used in the event one machine fails.

Log into TIBCO ActiveMatrix Administrator, navigate to Shared Resource Templates, and edit the hostname for the following resources:

- DELDAP1ConnShared
- EASYASConnShared
- LdapAspRT

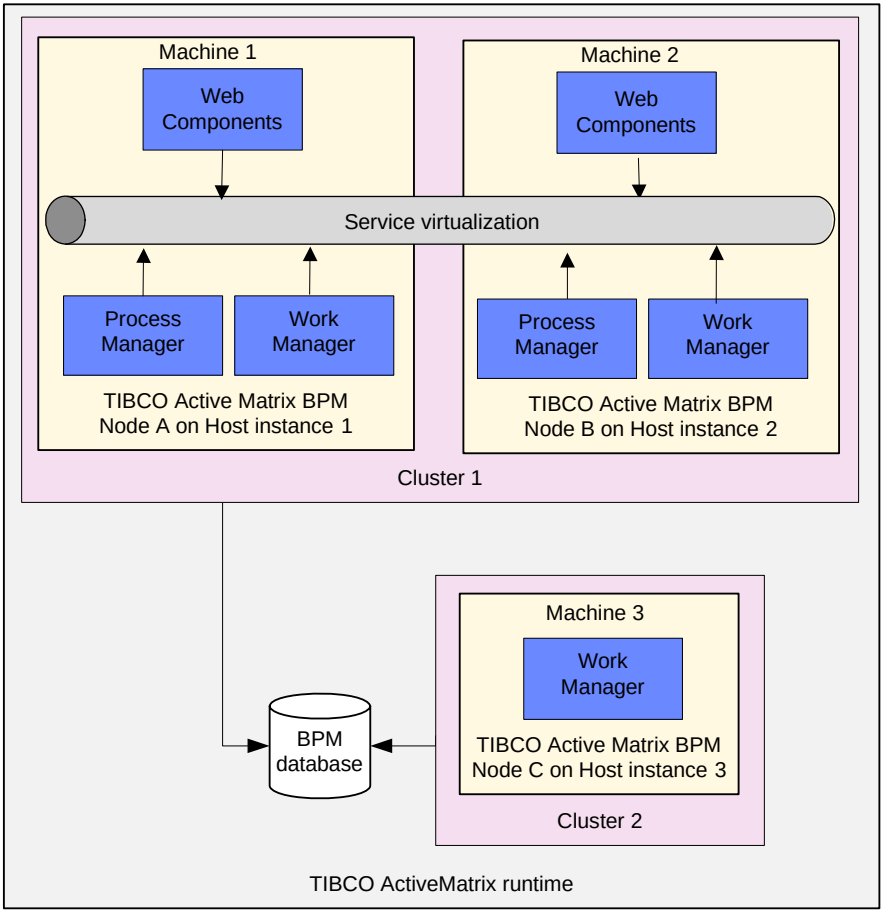
The hostname should be set to "LINAthos", rather than the original value of "LINPorthos".

You can now re-install the resource instances on both the BPMNode and BPMNodeReplica nodes. Navigate to Infrastructure, Hosts and reinstall the "Out of Sync" instances.



Setting up a Distributed System

To implement the distributed system illustrated in the figure below, perform the following steps.



1. **On machine 1**: Install TIBCO ActiveMatrix BPM using the **Install BPM, Administrator & TIBCO Host** profile. See Installing the Product for details.

2. **On machine 1:** Using TIBCO Configuration Tool:

If you wish to enable secure sockets layer (SSL) for the communication channels on the http connector used by TIBCO ActiveMatrix BPM, select Configure to Secure All Communication with SSL option when running the wizards in TIBCO Configuration Tool before creating the second BPM node. The other BPM nodes then inherit the SSL configuration.

Note that the certificate that is provided in the "out-of-the-box" configuration (which has not been signed by a Certificate Authority (CA)) cannot be used in a high availability environment as it will not be accessible from both machines.

However, if you do this, the "out-of-the-box" configuration provides you with a certificate that has not been signed by a Certificate Authority (CA). Ideally, you will install/provision your own CA signed certificate. See *TIBCO ActiveMatrix BPM Administration* guide for more information.

   a. Run the **Configure Third-Party Driver** wizard to register the JDBC drivers for your BPM database. See Configure Third-Party Driver Wizard Reference on page 111 for details.

   b. Run the **Create TIBCO ActiveMatrix BPM Server** wizard to create a TIBCO ActiveMatrix BPM server. See Create TIBCO ActiveMatrix BPM Server Reference on page 145 for details.

3. **On machines 2 and 3**: Install TIBCO ActiveMatrix BPM using the **Install Administrator & TIBCO Host** profile. See Running the TIBCO Configuration Tool on page 97 for details.

4. **On machines 2 and 3**: Using TIBCO Configuration Tool:

   a. Run the **Configure Third-Party Driver** wizard to register the JDBC drivers for your BPM database. See Configure Third-Party Driver Wizard Reference on page 111 for details.

b. Run the **Create TIBCO Host Instance** wizard to create a TIBCO Host, see Create TIBCO Host Instance Wizard Reference on page 30. From the **TIBCO Host Instance Configuration: Administrator Server** dialog, select **Bind this TIBCO Host instance with an existing Administrator server** box and enter the details of TIBCO ActiveMatrix Administrator server that you created on machine 1. On the **TIBCO Host Instance Configuration: Details** dialog, the properties should be as follows:

—**Name**: Type in the name of this new TIBCO host. The name must be unique for the enterprise.

—**Enterprise Name**: Type in the name of the enterprise that the TIBCO ActiveMatrix BPM node is using on machine 1.

—**Machine Name**: The machine name of machine 2 and 3, depending on which machine you are running the wizard on.

—**Management Port**: Type the port number that you want this TIBCO Host to use.

On the **TIBCO Host instance Configuration: Notification Server**, you need to specify the details of the TIBCO EMS Server that your TIBCO ActiveMatrix enterprise is using. The details should match what you entered on machine 1. The properties should be as follows:

—**Machine Name Port List**: Type in the machine name and port number of the TIBCO EMS server that your Enterprise is using.

—**Username**: Type in the name of the user that the TIBCO EMS server is using.

—**Password**: Type in the password for the user that the TIBCO EMS server is using.

On the **TIBCO Host Instance Configuration: Administrator Server** dialog, you need to specify the details of the TIBCO Administrator Server that you created on machine 1. Therefore, the details should match what you entered on machine 1. The properties should be as follows:

—Select the **Bind to Administrator server** checkbox.

—**Machine Name**: Type in the machine name of machine 1.

—**Management Port**: Type the port number that the TIBCO Administrator Server is using on machine 1.

—**Username**: Type in the name of the TIBCO Administrator server superuser on machine 1.

—**Password**: Type in the password for the TIBCO Administrator server superuser on machine 1.

5. **On machine 1**: You must run the **Configure TIBCO ActiveMatrix BPM Server Node Type** wizard twice to create:

   — a BPM Node Type

   — a Work Manager Node Type

   On the **ActiveMatrix BPM: Administrator Server Configuration:** dialog, the properties should be as follows:

   —**Machine Name**: Type the machine name of machine 1.

   —**Port**: Type the port number the TIBCO Administrator server is using on machine 1.

   —**Username**: Type the username of the TIBCO Administrator server superuser on machine 1.

   —**Password**: Type the username of the TIBCO Administrator server superuser on machine 1.

   On the **ActiveMatrix BPM: Host and Node Configuration** dialog, the properties should be as follows:

   —**Node Type**: Select the node type, depending on the node type you are creating. Work Manager Node Type.

   —**Node Name**: Type a unique name for the BPM Node. The name should be unique to the BPM environment. In this example, you need to create a two new nodes, **NodeB** and **NodeC**.

   —**Node Port**: Specify a port number for the BPM Node on the machine.

   —**Host**: Type the name of the TIBCO Host you created in step b.

   —**Environment Name**: Type the name of the BPM environment on machine 1.

   —**Override BPM Configuration Folder**: Select this to specify the shared network folder where you want to store the TIBCO ActiveMatrix BPM properties files. See *TIBCO ActiveMatrix BPM Administration* guide for details.

   —**Configuration Folder:** This is enabled if the **Override BPM Configuration Folder** checkbox is enabled. Type in the location of the shared network folder where you want to store the TIBCO ActiveMatrix BPM properties files.

6. Using TIBCO Administrator on machine 1, redistribute the following TIBCO ActiveMatrix BPM applications to the new node.

   — **amx.bpm.app**

   — any TIBCO ActiveMatrix BPM LDAP Authenticator applications. For example, if you are using the internal LDAP server provided with TIBCO ActiveMatrix BPM, these would be:

   —amx.bpm.auth.system

   —amx.bpm.auth.easyas

   a. Select **Applications**. From the **Environment** drop-down list, select the Environment name that you specified on machine 1. The default is **BPMEnvironment** for example.

   b. Select the TIBCO ActiveMatrix BPM application and click **Distribution**.

   c. From **Available Nodes**, the new node is now listed. Depending on which node you are configuring, select

   —**BPM Node** and drag NodeB from **Available Nodes** to **Selected Nodes**.

   —**WorkManager** and drag **NodeC** from **Available Nodes** to **Selected Nodes**.

   d. Click **Save**.

   e. Click **Refresh**. The TIBCO ActiveMatrix BPM application is displayed as **Out of Sync**.

   f. Click **Deploy** to redeploy theTIBCO ActiveMatrix BPM application.

   g. Click **Refresh**. The TIBCO ActiveMatrix BPM application is displayed as **In Sync**.

   h. Repeat these steps for every TIBCO ActiveMatrix BPM application that needs to be redistributed to the new node.

PART THREE CONFIGURATION

Chapter 5 Creating and Configuring Runtime Objects

This chapter describes how to create and configure ActiveMatrix BPM servers, ActiveMatrix BPM node types, ActiveMatrix Administrator servers, TIBCO Host instances, and install (configure) third party drivers using TIBCO Configuration Tool (TCT).

Topics

- Configuration Modes, page 93
- TIBCO Configuration Tool Requirements, page 94
- Running the TIBCO Configuration Tool, page 97
- TIBCO ActiveMatrix BPM Configuration Example on page 101

Configuration Modes

You configure ActiveMatrix BPM servers and node types, ActiveMatrix Administrator servers, and TIBCO Host instances, and install third-party drivers using one of the following modes:

- **GUI** Run TIBCO Configuration Tool and configure objects using wizards. See Running the TIBCO Configuration Tool on page 97.
- **Script** Edit and run TIBCO Configuration Tool scripts:
  a. Obtain a configuration:
  — Run TIBCO Configuration Tool in GUI mode once and save the configuration according to the instructions in Saving a TIBCO Configuration Tool Configuration on page 155.
  — Use one of the sample configurations described in TIBCO Configuration Tool Sample Configurations on page 155.
  b. Edit and run the configuration according to the instructions in Reusing a TIBCO Configuration Tool Configuration on page 156.

TIBCO Configuration Tool Requirements

TIBCO Enterprise Message Service Server Requirements and Prerequisites

A TIBCO Enterprise Message Service server acts as a notification server for the ActiveMatrix Administrator servers and TIBCO Host instances within an enterprise. The enterprise is defined by the enterprise name that you specify when you run the Create TIBCO ActiveMatrix Administrator Server and Create TIBCO Host Instance wizards and the TIBCO Enterprise Message Service server you specify. Ensure the following requirements and prerequisites are satisfied:

- Each enterprise must use a *different* TIBCO Enterprise Message Service server.
- If the TIBCO Enterprise Message Service user does not have administrator privileges, see Appendix C, TIBCO Enterprise Message Service Server Configuration Required for Non-Admin Users.
- The TIBCO Enterprise Message Service server must be running before you run the Create TIBCO ActiveMatrix Administrator Server and Create TIBCO Host Instance wizards.
- If you manually start the TIBCO Enterprise Message Service server, make sure you use the same configuration files as the Windows service. Use the following command that uses the `-config` option: *TIBCO_HOME*`/ems/version number/bin/tibemsd -config` *EMS_CONFIG_HOME*`/tibco/cfgmgmt/ems/data/tibemsd.conf`, where *EMS_CONFIG_HOME* is the Configuration Directory for TIBCO Enterprise Message Service.
- The clocks of machines within the same enterprise must be synchronized to within to 30 minutes. Synchronization can be achieved by running an NTP synchronization daemon on each machine.

SSL Prerequisites

If you intend to enable SSL communications, ensure the following prerequisites are satisfied.

TIBCO Enterprise Message Service Server

The TIBCO Enterprise Message Service server must be enabled with SSL and configured with a certificate file that contains both the server and issuer certificates before you run the Create TIBCO ActiveMatrix Administrator Server and Create TIBCO Host Instance wizards.

Database and LDAP Servers

Database and LDAP servers must be enabled with SSL before you run the Create TIBCO ActiveMatrix Administrator Server wizard.

Default Ports

Figure 1 on page 95 illustrates the default ports configured in TIBCO Configuration Tool. For information on how to change the ports after you have configured them, see Administration.

Figure 1 Default Ports

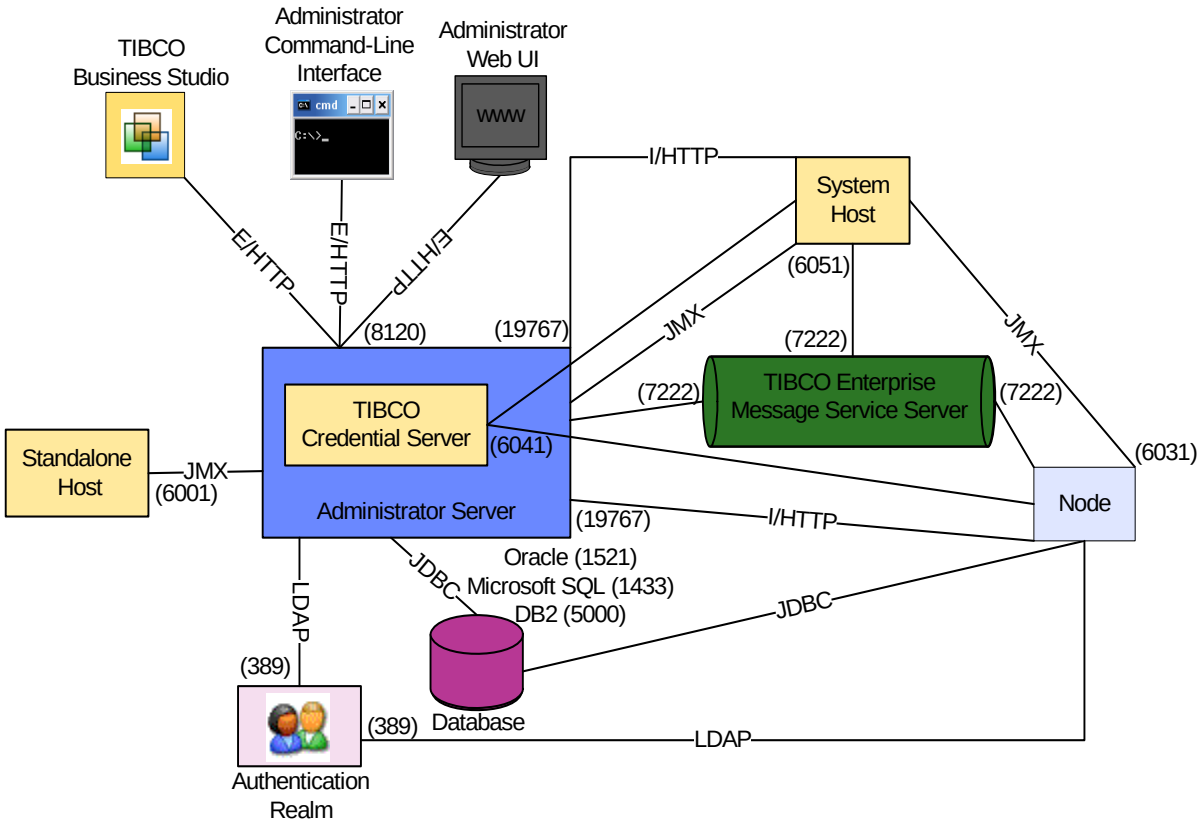


Table 6 lists the default ports for the TIBCO ActiveMatrix runtime objects configured in TIBCO Configuration Tool.

Table 6 Runtime Object Default Ports

Runtime Object	Default Port
SystemHost TIBCO Host instance management	6051
Standalone TIBCO Host instance management	6001
System node management	6021
Development node management	6031
TIBCO ActiveMatrix Administrator external HTTP	8120
TIBCO ActiveMatrix Administrator internal HTTP	19767
TIBCO Credential Server	6041

Table 7 lists the default ports for the server objects configured in TIBCO Configuration Tool.

Table 7 Server Default Ports

Server Object	Default Port
Enterprise Message Service server	7222 or 7243 (SSL)
Database	Oracle 1521 Microsoft SQL 1433 IBM DB2 5000
LDAP	389

Running the TIBCO Configuration Tool

This section describes running TCT to create the runtime objects required for an ActiveMatrix BPM setup.

1. Execute *TIBCO_HOME*`/tct/1.1/TIBCOConfigurationTool`. The TIBCO Configuration Folder dialog displays.

   A TIBCO configuration folder stores configuration data generated by TIBCO products. Configuration data can include sample scripts, session data, configured binaries, logs, and so on. The configuration folder is referred to as *CONFIG_HOME*.

2. Accept the default folder, type a folder name, or click **Browse** to select a folder.
3. Click **OK.** TIBCO Configuration Tool displays with links to the configuration wizards listed Table 8.

Table 8 Configuration Wizards

Wizard	Function
Configure TIBCO ActiveMatrix BPM Server Node Type - V1.3	Allows you to create an TIBCO ActiveMatrix BPM Node. You can create the following node types: • BPM Node Type • Process Manager Node Type • Work Manager Node Type • Web Components Node Type See Configure TIBCO ActiveMatrix BPM Server Node Type Reference on page 149 for details
Create TIBCO ActiveMatrix BPM Server - V1.3	Allows you to configure the TIBCO ActiveMatrix BPM database and runtime clients for TIBCO ActiveMatrix BPM. See Create TIBCO ActiveMatrix BPM Server Reference on page 145 for details.

Table 8 Configuration Wizards (Cont'd)

Wizard	Function
Create TIBCO ActiveMatrix Administrator Server - V3.1	In this wizard you: • Specify the properties of an ActiveMatrix Administrator server and optionally create the server. The TIBCO Host instance named SystemHost and SystemNode node that runs ActiveMatrix Administrator server and the development node will be started. • Optionally specify a development environment and node and start the node. • Specify the properties of monitoring, logging, and payload services running on SystemNode and optionally deploy the monitoring and logging services. • Specify the database that serves as a persistent store for ActiveMatrix Administrator server and the monitoring, logging, and payload services. See Create TIBCO ActiveMatrix Administrator Server Wizard Reference on page 117 for details.
Create TIBCO Host Instance - V3.1	Specify the communication and management properties of a standalone TIBCO Host instance and optionally create and launch the TIBCO Host instance. See Create TIBCO Host Instance Wizard Reference on page 112 for details.
Configure Third-Party Driver	Package and install third-party client driver libraries that implement APIs such as JDBC and JMS into the ActiveMatrix Administrator server software repository. See Configure Third-Party Driver Wizard Reference on page 111 for details.

4. Choose a wizard and configure according the wizard reference.
5. Click **Load**... to load the values saved from a previous configuration session. See Saving a TIBCO Configuration Tool Configuration on page 155.
6. Optionally check the **Configure to Secure All Communication with SSL** checkbox. When checked, the wizards containing communication channels display SSL configuration fields. For information on the supported communication channels, see Appendix B, Securing Communication Channels, on page 203.

7. On any screen, click **Finish** to accept default values (see Default Ports on page 95) for all the configuration properties and jump to the Summary screen.
8. In the Summary screen, the wizard reports the configuration tasks it will perform.
   - Click **Save** to save a configuration. See Saving a TIBCO Configuration Tool Configuration on page 155.
   - Click **Cancel** to return to the wizard selector screen.
   - Execute the configuration tasks:

   a. Uncheck the checkboxes next to tasks you do not want executed.

   b. Uncheck the checkboxes next to the product applications you do not want deployed to the development node.

   c. Click **Configure** to execute the tasks and save the configuration settings. The wizard reports the status of tasks as it completes them. On Windows systems, after the TIBCO Host instance is started, click **Unblock** if you see the following dialog pop up:

Windows Security Alert
To help protect your computer, Windows Firewall has blocked some features of this program.
Do you want to keep blocking this program?
Name: TIBCO Java Launcher
Publisher: TIBCO Software, Inc.
Keep Blocking
Unblock
Ask Me Later
Windows Firewall has blocked this program from accepting connections from the Internet or a network. If you recognize the program or trust the publisher, you can unblock it. When should I unblock a program?

Recommended Order to Run Wizards for ActiveMatrix BPM

The following table describes the recommended order to run the wizards for ActiveMatrix BPM which depends on the installation profile you chose during installation:

Installation Profile	Wizard
Install BPM, Administrator & TIBCO Host	• **Configure Third-Party Driver** to configure the JDBC Drivers for your database. • **Create TIBCO ActiveMatrix BPM Server - V1.3** to configure TIBCO ActiveMatrix BPM. [1] This wizard not only contains the configuration dialogs for TIBCO ActiveMatrix BPM but also incorporates the wizard **Create TIBCO ActiveMatrix Administrator Server**. This allows you to configure your TIBCO Administrator Server and TIBCO Host.
Install Administrator & TIBCO Host	• **Configure Third-Party Driver** to configure the JDBC Drivers for your database. • **Create TIBCO ActiveMatrix Administrator Server - V3.1**to configure your TIBCO ActiveMatrix Administrator Server.
Install TIBCO Host Only	• **Configure Third-Party Driver** to configure the JDBC Drivers for your database. • **Create TIBCO Host Instance - V3.1** to configure your TIBCO Host.

1. You can however choose to create the runtime objects in a different order. For example, after installing using the **Install BPM, Administrator & TIBCO Host** profile, you can create the ActiveMatrix Administrator server first and then create the ActiveMatrix BPM server. In this case, if you plan to use the existing Administrator Server, you must select the option **Use Existing ActiveMatrix Administrator Server** on the **Administrator Server Configuration** screen. Before clicking **Configure** on the Summary screen, ensure that the option **Create TIBCO ActiveMatrix Administrator server** is unchecked.

You can ignore wizards that are not relevant to the profile you selected.

The wizard **Configure TIBCO ActiveMatrix BPM Server Node Type - V1.3** helps configure a new ActiveMatrix BPM server node type on an existing ActiveMatrix Administrator server.

TIBCO ActiveMatrix BPM Configuration Example

This section describes the steps to configure the TIBCO ActiveMatrix BPM server following the recommended order of running the wizards.

This example uses the following third-party software:

- DBMS Software: Microsoft SQL Server 2008
- JDBC Driver: JDBC driver Version 2.0
- Internal LDAP

Task A Configure the Third-Party Driver

1. Click **Configure Third-Party Driver**. The **Configure Third-Party Driver Welcome** dialog displays.
2. Click **Next**. The **Third-Party Driver: Details** dialog displays.
3. Enter the following values:

Field	Value
Driver Type	JDBC
Driver	TIBCO enabled JDBC driver for Microsoft SQL Server 2.0.0

4. Click **Next**. The **Third-Party Driver: JAR Folder** dialog displays.
5. Either click **Browse** or type in the location of the folder containing the client driver JARs to install in TIBCO ActiveMatrix BPM.
6. Click **Finish**. The **Third Party: Summary** dialog displays.

Alternately, you can click **Save** and save the configuration to be run later. See Saving a TIBCO Configuration Tool Configuration on page 155 for details.

7. Click **Close** to exit the **Configure Third-Party Driver** wizard.

Task B Create TIBCO ActiveMatrix BPM Server

1. Click **Create TIBCO ActiveMatrix BPM Server**. The **Create TIBCO ActiveMatrix BPM Server Welcome** dialog displays.

   Optionally, check the **Configure to Secure All Communication with SSL** checkbox to enable secure sockets layer (SSL) for the communication channels

between your BPM runtime clients (Openspace, Workspace), and the BPM runtime.

Click **Next**. The **ActiveMatrix BPM: Database Administrator** dialog displays.

2. Complete the following fields:

Field	Description
Create BPM Database Instance	Select the checkbox for TIBCO Configuration Tool to create the TIBCO ActiveMatrix BPM database. Deselect this if you want to manually create the TIBCO ActiveMatrix BPM database.
Database Driver	The database driver you want to use for the TIBCO ActiveMatrix BPM database. **TIBCO enabled JDBC driver for Microsoft SQL Server 2.0.0**
URL	Once you have selected the database driver, the Admin JDBC URL field is automatically completed with the connection string used in the JDBC connection to the TIBCO ActiveMatrix BPM database. For example, `jdbc:sqlserver://uk-n2-base:1433;DatabaseName=master;SelectMethod=curder`
DBA Username	The user name of the login that you want BPM to use to connect to the TIBCO ActiveMatrix BPM database. For example, the default DBA Username for the JDBC driver for Microsoft SQL Server 2.0.0 is '**sa**'.
DBA Password	The password for the DBA username. For example, '**sa**'.
Tablespace Name	The name of the tablespace that is used to store the TIBCO ActiveMatrix BPM tables. The default tablespace name is **bpm_tablespace**.
Test Connection	Click **Test Connection** to test the connection to your database.

3. Click **Next**. The **ActiveMatrix BPM: Runtime Database Configuration** dialog displays.

4. Complete the following items as required:

Field	Description
URL	The URL field is automatically completed with the JDBC connection string used to connect to the TIBCO ActiveMatrix BPM database. For example, `jdbc:sqlserver://`*hostname*`:1433;DatabaseName=bpm;SelectMethod=cursor`
Username	Specify the username that you want TIBCO ActiveMatrix BPM to use to connect and log in to the TIBCO ActiveMatrix BPM database. TIBCO Configuration Tool automatically creates the username you specify. Default: bpmuser.
Password	Enter the password for the specified username.
Confirm Password	Re-enter the password for the specified username.
Generate Scripts	Click this if you want to manually create the TIBCO ActiveMatrix BPM database. This enables TIBCO Configuration Tool to extract the SQL scripts required for creating a TIBCO ActiveMatrix BPM database instance and place them in the `/BPM/database` directory. Once the scripts have been created, your database administrator can run them manually at a later time. See Manually Run the BPM Database Creation Scripts on page 108 for more information.
Test Connection	This is enabled if **Create BPM Database Instance** is not selected. If your database administrator has manually run the TIBCO ActiveMatrix BPM database creation scripts, then click **Test Connection**. If the connection is successful, this confirms that the username and password supplied in the fields above can connect to the TIBCO ActiveMatrix BPM database that has been created. This does not prove that all the database schema objects have been created, but it does confirm that the TIBCO ActiveMatrix BPM database creation scripts have been run.

5. Click **Next**. The **ActiveMatrix BPM: Configuration** dialog displays.

6. Complete the following items as required:

Field	Description
HTTP Work Presentation Host	The machine name that hosts Workspace. If the machine is different from the machine where you are running TIBCO ActiveMatrix BPM, then enter the fully qualified domain name or IP address in this field. The machine name specified here is also used in the default security certificate. Default: localhost
HTTP Port	The port number for Workspace. Default: 8080.
Enable SSL	Select the checkbox to enable secure HTTP communication for Workspace and Openspace.
SMTP Host	The machine name that hosts the SMTP server that is used by Workspace. If the machine is different from the machine where you are running TIBCO ActiveMatrix BPM, then enter the fully qualified domain name or IP address in this field. Default: localhost.
SMTP Port	The port number used by the SMTP server. Default: 25.
Override BPM Configuration Folder	Check this checkbox if you wish to override the default location of the BPM configuration folder.
Configuration Folder	This field is displayed only when the checkbox **Override BPM Configuration Folder** is checked. This field displays the default configuration folder location. You can choose to override this by specifying the absolute path of the required configuration folder.

7. Click **Next**. The **ActiveMatrix BPM: Sizing Configuration** dialog displays.

8. Complete the following items as required:

Field	Description
Environment	Choose the type of environment you are setting up. The drop-down list provides two options: **Development** and **Production**. The environment you choose in this field determines the default values provided for the remaining fields on this screen.
Database Connection Pool Size	Defines the number of database connections that will be available for each of the ActiveMatrix BPM DataSource resource templates. **Development default**: 10 **Production default**: 50
Database Statement Cache Size	Defines the number of prepared statements that can be cached by each connection in the DataSource resource template pool. Caching prepared statements improves the performance but it uses more memory. **Development default**: 0 **Production default**: 100
Number of Process Engine Threads	Defines the number of threads in the Process Engine background thread pool. **Development default**: 5 **Production default**: 18
Max Java PermGen Size	Specifies the maximum size for Java PermGen. **Development default**: 256 **Production default**: 1024
Number of Message Threads	Specifies the range for the message threads. **Development default**: Core: 5 Maximum: 10 **Production default**: Core: 10 Maximum: 20
Java Heap Size	Specifies the range for the Java heap size. **Development default**: Minimum: 512 Maximum: 1024 **Production default**: Minimum: 1024 Maximum: 4096

For more details about these parameters, see Tuning ActiveMatrix BPM.

9. Click **Next**. The **ActiveMatrix BPM: LDAP Configuration** dialog displays.
10. Complete the following items as required:

Field	Description
Use Internal LDAP Server	Select this if you want to use the internal LDAP Directory Server provided with TIBCO ActiveMatrix BPM. If checked the Port field is displayed; see LDAP Server on page 40. Default: Checked.
Port	The port number used by the Internal LDAP Server. Default: 10801
Use External LDAP Server	Select this if you want to use an external LDAP Directory Server. If checked, the LDAP provider details are displayed. Default: Unchecked.
URL	The URL used to log in to the external LDAP Server. Default: `ldap\localhost:10389`
Base DN:	The TIBCO ActiveMatrix Administrator user's distinguished name. Default: OU=system
Username:	The username of the TIBCO ActiveMatrix Administrator user, see Configuring the BPM Admin user (if using an external LDAP directory server) on page 40. Default:uid=admin,OU=system
Password:	The password of the TIBCO ActiveMatrix Administrator user.
Test Connection	Click **Test Connection** to confirm connection to the LDAP Server.

11. You can either:
    - Click **Finish** to accept the defaults for the rest of the dialogs.
    - Click **Next** to amend the details in the following dialogs which create or configure an ActiveMatrix Administrator server. You may wish to do this if you are creating a high availability implementation, for example.

12. Once you have completed the **Create TIBCO ActiveMatrix BPM Server** wizard, the **Summary** dialog displays, then:.

If you deselected the **Create BPM Database Instance** checkbox, the **Summary** dialog should say **Create ActiveMatrix BPM [Not Creating Database Instance]**.

If...	Do this...
Your database administrator has manually run the TIBCO ActiveMatrix BPM database creation scripts to create the database	Click **Configure** to configure TIBCO ActiveMatrix BPM. Make sure the following are unchecked: • Deploy Monitoring Service • Deploy Log Service This is because these services adversely effect the performance of TIBCO ActiveMatrix BPM. Click **Close** to exit the **Create TIBCO ActiveMatrix BPM Server** wizard. The wizard reports the status of tasks as it completes them. Once the status is **Successful!** Click **Close** to exit TIBCO Configuration Tool. The installation and configuration of TIBCO ActiveMatrix BPM is complete.
Your database administrator has not yet run the TIBCO ActiveMatrix BPM database creation scripts	Click **Save** to save the configuration information in a session script that can be used by TIBCO Configuration Tool to configure TIBCO ActiveMatrix BPM at a later date. Click **Cancel** to exit the **Create TIBCO ActiveMatrix BPM Server** wizard. Once your database administrator has manually run the TIBCO ActiveMatrix BPM database creation scripts (see Manually Run the BPM Database Creation Scripts on page 108), you will need to run the **Create TIBCO ActiveMatrix BPM Server** wizard again and from the **Summary** dialog, click **Configure** to complete the configuration of TIBCO ActiveMatrix BPM.
You are performing a silent install, you may wish to save the configuration information in a session script that can be used by TIBCO Configuration Tool to configure TIBCO ActiveMatrix BPM at a later date.	Click **Save** to save the configuration information in a session script that can be used by TIBCO Configuration Tool to configure TIBCO ActiveMatrix BPM at a later date. For more information, see TIBCO Configuration Tool Configuration on page 153,

Manually Run the BPM Database Creation Scripts

(This only applies to Oracle)

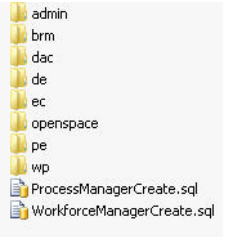
If you need to manually amend any of the BPM database creation scripts, make sure that you do not include any blank lines. If there are any blank lines, you will receive an error similar to the ones below:

```
SP2-0734: unknown command beginning "CONSTRAINT..."
SP2-0042: unknown command ")"
```

and the rest of the line is ignored. To resolve this, you can:

- remove all blank lines from the script
- `set sqlblanklines on` on the sqlplus session

The structure of the `/BPM/database` directory is shown below:



The `admin` directory contains the database administrator scripts that contain the commands needed to create the schema itself. In Oracle, this means creating the tablespaces and in SQL Server, creating the logins that will own the schema and database.

The rest of the directories contain the SQL scripts required to create and/or upgrade the tables for each BPM component. These are for reference only.

Your database administrator needs to run the following scripts in the order shown to manually create the BPM database:

Script	Description	Run As
`/BPM/database/admin/setup-admin.sql`	These scripts contain the commands needed prior to creating the schema itself. On Oracle this means creating the tablespaces and in SQL Server this means creating the logins that own the schema and database.	Database Administrator
`/BPM/database/admin/createdb-admin.sql`	These scripts contain the commands required to create the database and/or schema.	Database Administrator

Script	Description	Run As
/BPM/database/ProcessManagerCreate.sql	These scripts create the schema objects required for the process manager component.	BPM User
/BPM/database/WorkManagerCreate.sql	These scripts create the schema objects required for the work manager component. When running this script manually to create schema objects in DB2, you must set the statement termination character to '/' (forward-slash) rather than a ';'(semi-colon). See Set the Statement Termination Character to '/' on page 37 for details.	BPM User

Chapter 6 TIBCO Configuration Tool Wizard Reference

Topics

- Configure Third-Party Driver Wizard Reference, page 111
- Create TIBCO Host Instance Wizard Reference, page 112
- Create TIBCO ActiveMatrix Administrator Server Wizard Reference, page 117
- Create TIBCO ActiveMatrix BPM Server Reference, page 145
- Configure TIBCO ActiveMatrix BPM Server Node Type Reference, page 149
- Replicating a TIBCO ActiveMatrix Administrator Server, page 162

Configure Third-Party Driver Wizard Reference

Table 9 Details

Field	Description
Driver Type	The type of driver being configured: JDBC or JMS. Default: JDBC.
Driver	The supported drivers: • JDBC — TIBCO enabled JDBC driver for Microsoft SQL Server 2.0 — TIBCO enabled JDBC driver for Microsoft SQL Server 3.0 — TIBCO enabled JDBC driver for Oracle 10.2.0 — TIBCO enabled JDBC driver for Oracle 11.1.0 — TIBCO enabled JDBC driver for IBM DB2 2.3.63[1] — TIBCO enabled JDBC driver for IBM DB2 4.12.55 • JMS — TIBCO enabled JMS client for Sonic 6.1.0 — TIBCO enabled JMS client for WebSphere 7.0.0[2]

1. Not supported for ActiveMatrix Administrator and ActiveMatrix JDBC resource templates.

2. Support for WebSphere MQ 6.0 is based on the backward compatibility of the WebSphere MQ 7.0 client library. When a JMS binding is configured with JMS topics and needs to work with WebSphere MQ 6.0, you must provide the 7.1.0.3 version of the client library.

Table 10 JAR Folder

Field	Description
JAR Folder	The folder containing the client driver JARs to install in the ActiveMatrix Administrator server software repository.

Create TIBCO Host Instance Wizard Reference

Table 11 Welcome

Field	Description
Configure to Secure All Communication with SSL	Indicate that all communication channels will be secured with SSL. When checked, the Enable SSL checkbox on the TIBCO Enterprise Message Service Server and ActiveMatrix Administrator Server screens are checked. See SSL Prerequisites, page 94.

TIBCO Host Instance

Table 12 TIBCO Host Instance Details

Field	Description
Name	The name of the TIBCO Host instance. The name must be unique within the enterprise. Default: None.
Enterprise Name	The name of the communication group for notification messages sent between ActiveMatrix Administrator server and the hosts that are bound to the server. Default: amxadmin.
Machine Name	The name of the machine on which the TIBCO Host instance will run. The value of this property must either be a hostname resolvable through DNS or 0.0.0.0; it cannot be an IP address. Default: *machineName*, where *machineName* is the machine on which TIBCO Configuration Tool is being executed.
Management Port	The management port of the TIBCO Host instance. Default: 6001.
Register as Windows Service	Indicate whether the TIBCO Host instance should be registered as a Windows service named TIBCO ActiveMatrix *instanceName*, where *instanceName* is the name you specified in the Name field, with startup type Automatic. The service is not started. Default: Unchecked.

Table 12 TIBCO Host Instance Details (Cont'd)

Field	Description
Create Windows Shortcut	Indicate whether to create a shortcut named *instanceName*, where *instanceName* is the name you specified in the Name field, that points to *CONFIG_HOME*\tibcohost*instanceName*\host\bin\tibcohost.exe, to the Windows desktop. Default: Unchecked.

Notification and Messaging Bus Server

See TIBCO Enterprise Message Service Server Requirements and Prerequisites, page 94. If you intend to enable SSL communications, see SSL Prerequisites, page 94.

Table 13 TIBCO Enterprise Message Service Server

Field	Description
Machine Name Port List	A comma separated list of *machinename*:*port* addresses for a TIBCO Enterprise Message Service server. Default: *machinename*:*port*, where *machinename* is the machine on which TIBCO Configuration Tool is being executed and *port* is 7222.
Username	A username for the TIBCO Enterprise Message Service server. The user must have administrator privileges in the TIBCO Enterprise Message Service server. If the user does not have administrator privileges, see Appendix A, TIBCO Enterprise Message Service Server Configuration Required for Non-Admin Users, page 99. Default: admin.
Password	A password for the TIBCO Enterprise Message Service user. Default: None.
TIBCO Enterprise Message Service Server is SSL Enabled	Indicate that the TIBCO Enterprise Message Service server is enabled for SSL. When checked, the SSL Keystore Configuration fields are enabled. The TIBCO Enterprise Message Service server usually listens on port 7243 when SSL-enabled and you must update the value in the Machine Name Port List field before proceeding with SSL configuration.

Trust Keystore

Table 14 SSL Keystore Configuration

Field	Description
Create a Trust Store...	Invokes a wizard to import certificates from a server and create the trust store.
Keystore Location	The location of the keystore.
Keystore Type	The type of the keystore: JKS or JCEKS. Default: JKS.
Keystore Password	The password that protects the keystore.

Choose the source of the trust store keystore:

- **Create**
  a. Click **Create a Trust Store...**.
  b. Specify a password to protect the keystore and click **Next >**. The SSL setup wizard displays certificates imported from trusted servers.
  c. In the Trust Selected Certifications area, check the checkboxes next to the certificates to trust and click **Finish**. The wizard fills in the Keystore Location, Keystore Type, and Keystore Password fields.
- **Upload**
  a. Click **Browse** and navigate to the location of the keystore.
  b. Click the keystore and click **Open**. The wizard fills in the Keystore Location field.
  c. In the Keystore Type drop-down list, select the keystore type.
  d. Type the keystore password.
  e. Click **Test Connection**.

The following resource templates are added to the Administrator server:

— **Keystore Provider** notify.transport.truststore.csp.jndi

— **SSL Client Provider** notify.transport.sslclient.jndi

and instances of these resource templates are installed on every node managed by that server.

ActiveMatrix Administrator Server

Table 15 Administrator Server

Field	Description
Bind to Administrator Server	Indicate whether to bind the TIBCO Host instance to an Administrator server. When checked the Administrator server configuration fields are enabled. Default: Checked.
Machine Name	The name of the machine on which the Administrator server is running. The value of this property must either be a hostname resolvable through DNS or 0.0.0.0; it cannot be an IP address.
Port	The browser port used to access the Administrator server. Default: 8120.
Username	The ID of the initial superuser. Default: root.
Password	The password of the superuser. Default: t.
Admin Server is SSL Enabled	Indicate that the Administrator server internal port (see ActiveMatrix Administrator Internal HTTP Port on page 123) is enabled for SSL. When checked, the SSL Keystore Configuration fields are enabled.

Trust Keystore

Table 16 SSL Keystore Configuration

Field	Description
Create a Trust Store...	Invokes a wizard to import certificates from a server and create the trust store.
Keystore Location	The location of the keystore.
Keystore Type	The type of the keystore: JKS or JCEKS. Default: JKS.
Keystore Password	The password that protects the keystore.

Choose the source of the trust store keystore:

- **Create**
  a. Click **Create a Trust Store...**.
  b. Specify a password to protect the keystore and click **Next >**. The SSL setup wizard displays certificates imported from trusted servers.
  c. In the Trust Selected Certifications area, check the checkboxes next to the certificates to trust and click **Finish**. The wizard fills in the Keystore Location, Keystore Type, and Keystore Password fields.
- **Upload**
  a. Click **Browse** and navigate to the location of the keystore.
  b. Click the keystore and click **Open**. The wizard fills in the Keystore Location field.
  c. In the Keystore Type drop-down list, select the keystore type.
  d. Type the keystore password.
  e. Click **Test Connection**.

Create TIBCO ActiveMatrix Administrator Server Wizard Reference

The Create TIBCO ActiveMatrix Administrator Server wizard takes 15 minutes or more to complete depending on the configuration options.

Database Requirements

When running the wizard you specify a database for ActiveMatrix Administrator server and several system services. If you are using an external database other than HSQLDB, before running the wizard:

1. Package and install the database driver using the Configure Third-Party Driver Wizard Reference.
2. Configure the external database:

- **Oracle 11gR2**
  - The database user *cannot* have dba privileges, must have connect and resource privileges, and be assigned to the default schema
- **Microsoft SQL Server**
  - Run the command

    `alter database` *DB Name* `set read_committed_snapshot on`
  - The database user must be assigned the default database and have the db_owner role
  - Use the case insensitive collation setting
- **IBM DB2**
  - Configure the database with a 32KB page size (instead of default 4KB)

If you use an HSQLDB external database, concurrent user access to Administrator server is not supported.

3. Start the database server.

The following table summarizes the components that are configured in the **Create TIBCO ActiveMatrix Administrator Server** wizard, their function, and the decisions you must make, the information you must gather, and actions you must perform before running the wizard.

Table 17 TIBCO ActiveMatrix Administrator Server Wizard Reference

Component	Function	Options and Actions
TIBCO Host Instance See TIBCO Host Instance on page 121	The TIBCO Host instance that manages the SystemNode node on which the ActiveMatrix Administrator server runs.	Provide configuration details for the TIBCO Host instance.
BPM Node See TIBCO Host Instance on page 121.	A node on which to deploy BPM applications.	Provide the name and management port of the BPM node and the name of the environment that contains the node.
ActiveMatrix Administrator Server	Administers TIBCO ActiveMatrix applications and infrastructure.	Provide the name of the communication group within which status messages are exchanged and the name of the ActiveMatrix Administrator server. Provide communication properties for the ActiveMatrix Administrator server.
Notification and Messaging Bus Server	Propagates status messages between hosts, nodes, and the ActiveMatrix Administrator server and messaging between applications.	Provide configuration details for the TIBCO Enterprise Message Service server.
ActiveMatrix Administrator Server Database	Stores ActiveMatrix Administrator configuration data.	Choose an internal or external database. If the latter, provide configuration details for the database server. See Database Requirements on page 117.

Table 17 TIBCO ActiveMatrix Administrator Server Wizard Reference (Cont'd)

Component	Function	Options and Actions
ActiveMatrix Administrator Server Authentication Realm	Stores user and group data.	Choose a database or LDAP authentication realm. Provide configuration details for the authentication realm. A database authentication realm stores user and group authentication data in a database. Users and groups in this realm can be edited within ActiveMatrix Administrator. You have the option to use the same database for authentication and administration data. An LDAP authentication realm uses user and group authentication data stored in an LDAP server. Users and groups in this realm can only be edited with LDAP server management tools. If you choose database, and are using a database different than the one the ActiveMatrix Administrator server uses, provide configuration details for the database server. See Database Requirements on page 117. If you choose an LDAP realm, the LDAP server must be running.
TIBCO Credential Server	Provides credentials to enable secure interactions between ActiveMatrix Administrator servers, hosts, and nodes.	Choose an autogenerated or external keystore. If you choose an external keystore, provide configuration details for the keystore.
Monitoring Service Notification Server	Aggregates monitoring data.	Choose the ActiveMatrix Administrator notification server and database or another notification server and database. If the latter, provide the notification server and database configuration details according to Database Requirements on page 117. Choose whether the monitoring system should capture enhanced statistics.

Table 17 TIBCO ActiveMatrix Administrator Server Wizard Reference (Cont'd)

Component	Function	Options and Actions
Log Service	Aggregates and stores log entry data.	Choose the ActiveMatrix Administrator database or another database. If you are using a database different than the one the ActiveMatrix Administrator server uses, see Database Requirements on page 117.
Payload Service	Stores large payloads associated with log entries.	Choose the ActiveMatrix Administrator database or another database. If you are using a database different than the one the ActiveMatrix Administrator server uses, see Database Requirements on page 117.

Table 18 Welcome

Field	Description
Configure to Secure All Communication with SSL	Check to indicate that all communication channels will be secured with SSL. When checked, the SSL enabled checkboxes on the Browser Port, Internal HTTP Port, TIBCO Enterprise Message Service, database, and LDAP screens are checked. See SSL Prerequisites, page 94.

ActiveMatrix Administrator Server

Table 19 ActiveMatrix Administrator Server

Field	Description
Enterprise Name	Defines a communication group for notification messages sent between ActiveMatrix Administrator server, the hosts that are bound to the server, and the nodes that are managed by those hosts. Default:AMX BPM.
Server Name	The name of the ActiveMatrix Administrator server. Default: AMXBPM Server.

TIBCO Host Instance

Table 20 TIBCO Host Instance

Field	Description
Machine Name	The name of the machine on which the TIBCO Host instance runs. The value of this property must either be a hostname resolvable through DNS or 0.0.0.0; it cannot be an IP address. Default: *machineName*, where *machineName* is the machine on which TIBCO Configuration Tool is being executed.
Port	The management port of the TIBCO Host instance. Default: 6051.
Register as Windows Service	Indicate whether the TIBCO Host instance should be registered as a Windows service named TIBCO ActiveMatrix Admin-*enterpriseName-serverName* with startup type Automatic. The service is not started. Default: Unchecked.
Create Windows Shortcut	Indicate whether a shortcut named TIBCO ActiveMatrix Admin-*enterpriseName-serverName* that points to *CONFIG_HOME*`\tibcohost\Admin-`*enterpriseName-serverName*`\host\bin\tibcohost.exe` should be added to the Windows desktop. Default: Unchecked.
Customize BPM Node	Indicate whether to customize the BPM environment and node. When checked, the Environment Name, Node Name, and Node Management Port fields display. Default: Checked.
Environment Name	The name of the environment that contains the node. Default: BPM Environment.
Node Name	The name of the BPM node. Default: BPMNode.
Node Management Port	The management port of the node. Default: 6031.

ActiveMatrix Administrator Connection Settings

Table 21 Connection Settings

Field	Description
Network Adapter	The address of the network adapter on the machine on which the ActiveMatrix Administrator server runs. The default is set to 0.0.0.0 so that ActiveMatrix Administrator will listen on all network adapters (including http://localhost and http://hostname) so that clients can connect to the ActiveMatrix Administrator server using any of the conventions (localhost, IP address, hostname). The value of this property must either be a hostname resolvable through DNS or 0.0.0.0; it cannot be an IP address. Default: 0.0.0.0.
Management Port	The management port number of the node, SystemNode, that runs the ActiveMatrix Administrator server. Default: 6021.
External HTTP Port	The number of the external ActiveMatrix Administrator HTTP port. Default: 8120.
Browser Idle Session Timeout(m)	The length of time before an ActiveMatrix Administrator GUI login session times out due to inactivity. This value cannot be changed after the ActiveMatrix Administrator server is created. Default: 30.
Enable SSL for External HTTP Port	Indicate whether communication between ActiveMatrix Administrator server and clients should be secured with SSL. When checked, the Self-Signed Certificate and Imported Certificate radio buttons display. Default: Unchecked.
Self-Signed Certificate	Indicate that ActiveMatrix Administrator server will identify itself to clients with a self-signed certificate generated by TIBCO Credential Server (see TIBCO Credential Server on page 133). This option is selected by default. A self-signed certificate should not be employed in production environments.
Imported Certificate	Indicate that ActiveMatrix Administrator server will identify itself to clients with a certificate imported into ActiveMatrix Administrator server. When selected, the Keystore fields are enabled.
Keystore Location	The location of the keystore to import.

Table 21 Connection Settings (Cont'd)

Field	Description
Keystore Type	The type of the uploaded keystore: JKS or JCEKS. Default: JKS.
Keystore Password	The password that protects the keystore.
Key Alias	The key alias that identifies the ActiveMatrix Administrator server entry in the keystore.
Key Password	The password that protects the key alias.

ActiveMatrix Administrator Internal HTTP Port

Table 22 Internal HTTP Port

Field	Description
Internal HTTP Port	The number of the internal ActiveMatrix Administrator HTTP port. Default: 19767.
Enable SSL	Indicate whether communication between ActiveMatrix Administrator server and hosts and nodes is secured with SSL. Default: Unchecked.
Use HTTP Load Balancer	Indicate that an HTTP load balancer will be used to distribute requests from hosts to the ActiveMatrix Administrator server's internal HTTP port. When the ActiveMatrix Administrator server is replicated on two machines, you should use an HTTP load balancer so that traffic between hosts and ActiveMatrix Administrator server will support a load-balanced and fault-tolerant mode. Without a load balancer if one ActiveMatrix Administrator server is unavailable, hosts will be unable to download software artifacts. When checked, the Load Balancer URL field displays.
Load Balancer URL	The base URL for the ActiveMatrix Administrator server load balancer. Default: http://*hostname*:*port*, where *hostname* is the ActiveMatrix Administrator server hostname and *port* is the ActiveMatrix Administrator server port.

Notification and Messaging Bus Server

See TIBCO Enterprise Message Service Server Requirements and Prerequisites, page 94. If you intend to enable SSL communications, see SSL Prerequisites, page 94.

Table 23 TIBCO Enterprise Message Service Server

Field	Description
Machine Name Port List	A comma separated list of *machinename*:*port* addresses for a TIBCO Enterprise Message Service server. Default: *machinename*:*port*, where *machinename* is the machine on which TIBCO Configuration Tool is being executed and *port* is 7222.
Username	A username for the TIBCO Enterprise Message Service server. The user must have administrator privileges in the TIBCO Enterprise Message Service server. If the user does not have administrator privileges, see Appendix A, TIBCO Enterprise Message Service Server Configuration Required for Non-Admin Users, page 99. Default: admin.
Password	A password for the TIBCO Enterprise Message Service user. Default: None.
TIBCO Enterprise Message Service Server is SSL Enabled	Indicate that the TIBCO Enterprise Message Service server is enabled for SSL. When checked, the SSL Keystore Configuration fields are enabled. The TIBCO Enterprise Message Service server usually listens on port 7243 when SSL-enabled and you must update the value in the Machine Name Port List field before proceeding with SSL configuration.

Trust Keystore

Table 24 SSL Keystore Configuration

Field	Description
Create a Trust Store...	Invokes a wizard to import certificates from a server and create the trust store.
Keystore Location	The location of the keystore.
Keystore Type	The type of the keystore: JKS or JCEKS. Default: JKS.
Keystore Password	The password that protects the keystore.

Choose the source of the trust store keystore:

- **Create**
  a. Click **Create a Trust Store...**.
  b. Specify a password to protect the keystore and click **Next >**. The SSL setup wizard displays certificates imported from trusted servers.
  c. In the Trust Selected Certifications area, check the checkboxes next to the certificates to trust and click **Finish**. The wizard fills in the Keystore Location, Keystore Type, and Keystore Password fields.
- **Upload**
  a. Click **Browse** and navigate to the location of the keystore.
  b. Click the keystore and click **Open**. The wizard fills in the Keystore Location field.
  c. In the Keystore Type drop-down list, select the keystore type.
  d. Type the keystore password.
  e. Click **Test Connection**.

The following resource templates are added to the Administrator server:

— **Keystore Provider** notify.transport.truststore.csp.jndi

— **SSL Client Provider** notify.transport.sslclient.jndi

and instances of these resource templates are installed on every node managed by that server.

ActiveMatrix Administrator Server Database

If you are using an external database, see Database Requirements on page 117. If you intend to enable SSL communications, see SSL Prerequisites, page 94.

Table 25 Database Details

Field	Description
Use Default In-Process Database	Indicate that the ActiveMatrix Administrator server database is an embedded in-process database. If unchecked, the external database configuration fields display. Default: Checked.

Table 25 Database Details (Cont'd)

Field	Description
Database Driver	The driver for the external database. Default: `org.hsqldb.jdbcDriver`.
Database URL	The URL of the external database. Default: jdbc:hsqldb:hsql://localhost:1234/amx.
Username	The external database username. Default: sa.
Password	The external database password. Default: None.
Max Connections	The maximum number of database connections to allocate. Default: 5.
Database Server is SSL Enabled	Indicate that the database server is enabled for SSL. When checked, the SSL Keystore Configuration fields are enabled.

Trust Keystore

Table 26 SSL Keystore Configuration

Field	Description
Create a Trust Store...	Invokes a wizard to import certificates from a server and create the trust store.
Keystore Location	The location of the keystore.
Keystore Type	The type of the keystore: JKS or JCEKS. Default: JKS.
Keystore Password	The password that protects the keystore.

Choose the source of the trust store keystore:

- **Create**

a. Click **Create a Trust Store...**.

b. Specify a password to protect the keystore and click **Next >**. The SSL setup wizard displays certificates imported from trusted servers.

c. In the Trust Selected Certifications area, check the checkboxes next to the certificates to trust and click **Finish**. The wizard fills in the Keystore Location, Keystore Type, and Keystore Password fields.

- **Upload**

a. Click **Browse** and navigate to the location of the keystore.

b. Click the keystore and click **Open**. The wizard fills in the Keystore Location field.

c. In the Keystore Type drop-down list, select the keystore type.

d. Type the keystore password.

e. Click **Test Connection**.

The following resource templates are added to the Administrator server:

— **Keystore Provider** notify.transport.truststore.csp.jndi

— **SSL Client Provider** notify.transport.sslclient.jndi

and instances of these resource templates are installed on every node managed by that server.

ActiveMatrix Administrator Server Authentication Realm

Table 27 Authentication Realm

Field	Description
Authentication Realm	
Realm Type	The type of the authentication realm: Database or LDAP. If Database, the Database Authentication Realm on page 128 screen displays. If LDAP, the LDAP Authentication Realm on page 129 screens display.
Superuser Credentials	
Username	The ID of the initial superuser. Default: root.

Table 27 Authentication Realm

Field	Description
Password	The password of the superuser. Default: t.

Database Authentication Realm

Table 28 Database Authentication Realm Details

Field	Description
Use ActiveMatrix Administrator Database	Specify whether the database authentication realm should use the same database as the ActiveMatrix Administrator server. Default: Checked. If unchecked, the database configuration fields in Database Details on page 128 display.

Database Details

If you are using an external database, see Database Requirements on page 117.

Table 29 Database Details

Field	Description
Use Default In-Process Database	Indicate that the ActiveMatrix Administrator server database is an embedded in-process database. If unchecked, the external database configuration fields display. Default: Checked.
Database Driver	The driver for the external database. Default: `org.hsqldb.jdbcDriver`.
Database URL	The URL of the external database. Default: jdbc:hsqldb:hsql://localhost:1234/amx.
Username	The external database username. Default: sa.
Password	The external database password. Default: None.

Table 29 Database Details (Cont'd)

Field	Description
Max Connections	The maximum number of database connections to allocate. Default: 5.
Database Server is SSL Enabled	Indicate that the database server is enabled for SSL. When checked, the SSL Keystore Configuration fields are enabled.

LDAP Authentication Realm

If you intend to enable SSL communications, see SSL Prerequisites, page 94.

Table 30 LDAP Authentication Realm Details

Field	Description
Bind DN Name	The superuser's distinguished name or superuser's name to be used to connect to the server. Default: `uid=Manager,ou=people,dc=example,dc=com`.
Password	LDAP server password.
Context Factory	The factory object that provides the starting point for resolution of names within the LDAP server. Default: `com.sun.jndi.ldap.LdapCtxFactory`.
Server URL	The URL used to log in to the LDAP server. To achieve fault tolerance, you can specify multiple URLs separated by spaces. For example, ldaps://server1.example.com:686 ldaps:server2.example.com:1686. Default: `ldap://localhost:389`.
User Search Configuration	
User Search Base DN	Base distinguished name from which the search starts. Default: `ou=people,ou=na,dc=example,dc=org`.
User Search Expression	The expression used for searching a user. For example: (CN=%U). '%U' is replaced by the username being searched for. You can define any complex filter such as (&(cn=%U)(objectClass=account)). Default: `(&(uid={0})(objectclass=person))`.

Table 30 LDAP Authentication Realm Details (Cont'd)

Field	Description
Attribute Name to Get User's Name	The name of the attribute in the user object that represents the user's name. Default: uid.
Search Timeout (ms)	The time to wait for a response from the LDAP directory server. Default: -1, which means to use the provider's default.

Table 31 Group Settings

Field	Description
Group Search Base DN	Base distinguished name from which the search for the group starts. Default: `ou=groups,ou=na,dc=example,dc=org`.
Group Search Expression	Search by matching this expression against potential groups. Default: `uniquemember={0}`.
Group Attribute Users Name	The name of the attribute in each group object denoting its users. Example: uniqueMember (OpenLDAP) or member (ActiveDirectory). Default: `uniqueMember`.
Group Attribute Groups Name	The name of the attribute in each group object that contains the name of the group. Example: cn (OpenLDAP) or sAMAccountName (ActiveDirectory). Default: `cn`.
Group Attribute Subgroup Name	The name of the attribute in each group denoting subgroups. Example: uniqueMember (OpenLDAP) or member (ActiveDirectory). Default: `uniqueMember`.

Table 31 Group Settings (Cont'd)

Field	Description
Group Indication	Specifies how a user's group memberships are found. Group information is used by the Administrator when a user, once authenticated, performs other activities in the system. Options: • Group Has User Members— A list of users that belong to the group. • User Has Group Memberships— A list of groups to which the user belongs. Default: Group Has User Members.
Group Search Scope Subtree	When searching the group, indicate whether to traverse into the subtree or to search only under the group base distinguished name. Default: Checked.

Table 32 LDAP Server Settings

Field	Description
LDAP Realm	
User Search Scope Subtree (optional)	Search the entire subtree starting at the base DN, otherwise search only the nodes one level below the base DN. Default: Checked.
Security Authentication	Security protocol to be used by JNDI. • Simple—Username and password are required. • Strong—SSL with client-side authentication is enabled. • None—No log-in is performed, any other settings are ignored, and the LDAP client is anonymous. Default: Simple.

Table 32 LDAP Server Settings (Cont'd)

Field	Description
LDAP Authentication	
User DN Template	The template by which the User DN, used to connect to the LDAP server, is generated. Because the full DN is always supplied, the template should always be 0 (zero). Default: `uid={0},ou=people,ou=na,dc=org`
User Attributes Extra (optional)	An optional list of user attributes to retrieve from the LDAP directory during authentication. Default: Empty (no additional attributes will be retrieved for the user).
Enable SSL	Indicate that the LDAP server is enabled for SSL. When checked, the SSL Keystore Configuration fields are enabled.

Trust Keystore

Table 33 SSL Keystore Configuration

Field	Description
Create a Trust Store...	Invokes a wizard to import certificates from a server and create the trust store.
Keystore Location	The location of the keystore.
Keystore Type	The type of the keystore: JKS or JCEKS. Default: JKS.
Keystore Password	The password that protects the keystore.

Choose the source of the trust store keystore:

- **Create**
  a. Click **Create a Trust Store...**.
  b. Specify a password to protect the keystore and click **Next >**. The SSL setup wizard displays certificates imported from trusted servers.
  c. In the Trust Selected Certifications area, check the checkboxes next to the certificates to trust and click **Finish**. The wizard fills in the Keystore Location, Keystore Type, and Keystore Password fields.

- **Upload**
  a. Click **Browse** and navigate to the location of the keystore.
  b. Click the keystore and click **Open**. The wizard fills in the Keystore Location field.
  c. In the Keystore Type drop-down list, select the keystore type.
  d. Type the keystore password.
  e. Click **Test Connection**.

The following resource templates are added to the Administrator server:

— **Keystore Provider** notify.transport.truststore.csp.jndi

— **SSL Client Provider** notify.transport.sslclient.jndi

and instances of these resource templates are installed on every node managed by that server.

TIBCO Credential Server

Table 34 Credential Server Details

Field	Description
Bind to Network Adapter	The address of the network adapter on the machine on which the Credential Server runs. The default is set to 0.0.0.0 so that the Credential Server will listen on all network adapters (including http://localhost and http://hostname) so that clients can connect to the Credential Server using any of the conventions (localhost, IP address, hostname). The value of this property must either be a hostname resolvable through DNS or 0.0.0.0; it cannot be an IP address. Default: 0.0.0.0.
Port	The management port number of the node, SystemNode, that runs the TIBCO Credential Server. Default: 6041.
Username	A user identifier for TIBCO Credential Server clients. Default: user1.

Table 34 Credential Server Details

Field	Description
Password	The password for the client. Default: password1.

Table 35 Credential Server Keystore

Field	Description
Auto-generated Keystore	Indicate that the TIBCO Credential Server keystore will be generated. When selected, the Common Name field displays.
Common Name	The TIBCO Credential Server's issuer name. Default: amxadmin.
Provided Keystore	Indicate that the TIBCO Credential Server keystore will be provided. When selected, the keystore fields display.
Keystore Location	The location of the keystore. Default: *TIBCO_HOME*`/tibcohost/1.2/templates/admin.default.ssl.trust.store.ts`.
Keystore Type	The type of the keystore. Default: JCEKS.
Keystore Password	The password for the keystore.
Key Alias	The name of the alias used to access the identity.
Key Password	The password for the alias.

Monitoring Service Notification Server

Table 36 Monitoring Notification Server

Field	Description
Use ActiveMatrix Administrator Notification Server	Indicate whether the monitoring service should use the same notification server as the ActiveMatrix Administrator server. Default: Checked. If unchecked, the notification server fields in Notification and Messaging Bus Server on page 135 display.

Notification and Messaging Bus Server

See TIBCO Enterprise Message Service Server Requirements and Prerequisites, page 94. If you intend to enable SSL communications, see SSL Prerequisites, page 94.

Table 37 TIBCO Enterprise Message Service Server

Field	Description
Machine Name Port List	A comma separated list of *machinename*:*port* addresses for a TIBCO Enterprise Message Service server. Default: *machinename*:*port*, where *machinename* is the machine on which TIBCO Configuration Tool is being executed and *port* is 7222.
Username	A username for the TIBCO Enterprise Message Service server. The user must have administrator privileges in the TIBCO Enterprise Message Service server. If the user does not have administrator privileges, see Appendix A, TIBCO Enterprise Message Service Server Configuration Required for Non-Admin Users, page 99. Default: admin.
Password	A password for the TIBCO Enterprise Message Service user. Default: None.
TIBCO Enterprise Message Service Server is SSL Enabled	Indicate that the TIBCO Enterprise Message Service server is enabled for SSL. When checked, the SSL Keystore Configuration fields are enabled. The TIBCO Enterprise Message Service server usually listens on port 7243 when SSL-enabled and you must update the value in the Machine Name Port List field before proceeding with SSL configuration.

Trust Keystore

Table 38 SSL Keystore Configuration

Field	Description
Create a Trust Store...	Invokes a wizard to import certificates from a server and create the trust store.
Keystore Location	The location of the keystore.
Keystore Type	The type of the keystore: JKS or JCEKS. Default: JKS.
Keystore Password	The password that protects the keystore.

Choose the source of the trust store keystore:

- **Create**
  a. Click **Create a Trust Store...**.
  b. Specify a password to protect the keystore and click **Next >**. The SSL setup wizard displays certificates imported from trusted servers.
  c. In the Trust Selected Certifications area, check the checkboxes next to the certificates to trust and click **Finish**. The wizard fills in the Keystore Location, Keystore Type, and Keystore Password fields.
- **Upload**
  a. Click **Browse** and navigate to the location of the keystore.
  b. Click the keystore and click **Open**. The wizard fills in the Keystore Location field.
  c. In the Keystore Type drop-down list, select the keystore type.
  d. Type the keystore password.
  e. Click **Test Connection**.

The following resource templates are added to the Administrator server:

— **Keystore Provider** notify.transport.truststore.csp.jndi

— **SSL Client Provider** notify.transport.sslclient.jndi

and instances of these resource templates are installed on every node managed by that server.

Monitoring Service Database

Table 39 Monitoring Service Database

Field	Description
Use ActiveMatrix Administrator Database	Indicate that the monitoring service should use the same database as the ActiveMatrix Administrator server. Default: Checked. If unchecked, the notification server fields in Database Details on page 137 display.

Database Details

If you are using an external database, see Database Requirements on page 117. In you intend to enable SSL communications, see SSL Prerequisites, page 94.

Table 40 Database Details

Field	Description
Use Default In-Process Database	Indicate that the ActiveMatrix Administrator server database is an embedded in-process database. If unchecked, the external database configuration fields display. Default: Checked.
Database Driver	The driver for the external database. Default: `org.hsqldb.jdbcDriver`.
Database URL	The URL of the external database. Default: jdbc:hsqldb:hsql://localhost:1234/amx.
Username	The external database username. Default: sa.
Password	The external database password. Default: None.
Max Connections	The maximum number of database connections to allocate. Default: 5.

Table 40 Database Details (Cont'd)

Field	Description
Database Server is SSL Enabled	Indicate that the database server is enabled for SSL. When checked, the SSL Keystore Configuration fields are enabled.

Trust Keystore

Table 41 SSL Keystore Configuration

Field	Description
Create a Trust Store...	Invokes a wizard to import certificates from a server and create the trust store.
Keystore Location	The location of the keystore.
Keystore Type	The type of the keystore: JKS or JCEKS. Default: JKS.
Keystore Password	The password that protects the keystore.

Choose the source of the trust store keystore:

- **Create**
  a. Click **Create a Trust Store...**.
  b. Specify a password to protect the keystore and click **Next >**. The SSL setup wizard displays certificates imported from trusted servers.
  c. In the Trust Selected Certifications area, check the checkboxes next to the certificates to trust and click **Finish**. The wizard fills in the Keystore Location, Keystore Type, and Keystore Password fields.
- **Upload**
  a. Click **Browse** and navigate to the location of the keystore.
  b. Click the keystore and click **Open**. The wizard fills in the Keystore Location field.
  c. In the Keystore Type drop-down list, select the keystore type.
  d. Type the keystore password.
  e. Click **Test Connection**.

The following resource templates are added to the Administrator server:

- **Keystore Provider** notify.transport.truststore.csp.jndi
- **SSL Client Provider** notify.transport.sslclient.jndi

and instances of these resource templates are installed on every node managed by that server.

Monitoring Configuration

Table 42 Monitoring Configuration

Field	Description
Enable Extended Monitoring	Indicate that the monitoring system should capture extended statistics. Basic statistics include the 1 hour and since started time windows and a selected number of important metrics such as status, hits, faults, response time. Extended statistics provide more time windows and additional metrics and thus impose a larger processing burden. Default: Unchecked.

Log Service

Table 43 Log Service Database

Field	Description
Use ActiveMatrix Administrator Database	Indicate that the log service should use the same database as the ActiveMatrix Administrator server. Default: Checked. If unchecked, the database server fields in Database Details on page 139 display.

Database Details

If you are using an external database, see Database Requirements on page 117. If

you intend to enable SSL communications, see SSL Prerequisites, page 94.

Table 44 Database Details

Field	Description
Use Default In-Process Database	Indicate that the ActiveMatrix Administrator server database is an embedded in-process database. If unchecked, the external database configuration fields display. Default: Checked.
Database Driver	The driver for the external database. Default: `org.hsqldb.jdbcDriver`.
Database URL	The URL of the external database. Default: jdbc:hsqldb:hsql://localhost:1234/amx.
Username	The external database username. Default: sa.
Password	The external database password. Default: None.
Max Connections	The maximum number of database connections to allocate. Default: 5.
Database Server is SSL Enabled	Indicate that the database server is enabled for SSL. When checked, the SSL Keystore Configuration fields are enabled.

Trust Keystore

Table 45 SSL Keystore Configuration

Field	Description
Create a Trust Store...	Invokes a wizard to import certificates from a server and create the trust store.
Keystore Location	The location of the keystore.

Table 45 SSL Keystore Configuration (Cont'd)

Field	Description
Keystore Type	The type of the keystore: JKS or JCEKS. Default: JKS.
Keystore Password	The password that protects the keystore.

Choose the source of the trust store keystore:

- **Create**
  a. Click **Create a Trust Store...**.
  b. Specify a password to protect the keystore and click **Next >**. The SSL setup wizard displays certificates imported from trusted servers.
  c. In the Trust Selected Certifications area, check the checkboxes next to the certificates to trust and click **Finish**. The wizard fills in the Keystore Location, Keystore Type, and Keystore Password fields.
- **Upload**
  a. Click **Browse** and navigate to the location of the keystore.
  b. Click the keystore and click **Open**. The wizard fills in the Keystore Location field.
  c. In the Keystore Type drop-down list, select the keystore type.
  d. Type the keystore password.
  e. Click **Test Connection**.

The following resource templates are added to the Administrator server:

— **Keystore Provider** notify.transport.truststore.csp.jndi

— **SSL Client Provider** notify.transport.sslclient.jndi

and instances of these resource templates are installed on every node managed by that server.

Payload Service

Table 46 Payload Service Database

Field	Description
Use ActiveMatrix Administrator Database	Indicate that the payload service should use the same database as the ActiveMatrix Administrator server. Default: Checked. If unchecked, the database server fields in Database Details on page 142 display.

Database Details

If you are using an external database, see Database Requirements on page 117. If you intend to enable SSL communications, see SSL Prerequisites, page 94.

Table 47 Database Details

Field	Description
Use Default In-Process Database	Indicate that the ActiveMatrix Administrator server database is an embedded in-process database. If unchecked, the external database configuration fields display. Default: Checked.
Database Driver	The driver for the external database. Default: `org.hsqldb.jdbcDriver`.
Database URL	The URL of the external database. Default: jdbc:hsqldb:hsql://localhost:1234/amx.
Username	The external database username. Default: sa.
Password	The external database password. Default: None.
Max Connections	The maximum number of database connections to allocate. Default: 5.

Table 47 Database Details (Cont'd)

Field	Description
Database Server is SSL Enabled	Indicate that the database server is enabled for SSL. When checked, the SSL Keystore Configuration fields are enabled.

Trust Keystore

Table 48 SSL Keystore Configuration

Field	Description
Create a Trust Store...	Invokes a wizard to import certificates from a server and create the trust store.
Keystore Location	The location of the keystore.
Keystore Type	The type of the keystore: JKS or JCEKS. Default: JKS.
Keystore Password	The password that protects the keystore.

Choose the source of the trust store keystore:

- **Create**
  a. Click **Create a Trust Store...**.
  b. Specify a password to protect the keystore and click **Next >**. The SSL setup wizard displays certificates imported from trusted servers.
  c. In the Trust Selected Certifications area, check the checkboxes next to the certificates to trust and click **Finish**. The wizard fills in the Keystore Location, Keystore Type, and Keystore Password fields.
- **Upload**
  a. Click **Browse** and navigate to the location of the keystore.
  b. Click the keystore and click **Open**. The wizard fills in the Keystore Location field.
  c. In the Keystore Type drop-down list, select the keystore type.
  d. Type the keystore password.
  e. Click **Test Connection**.

The following resource templates are added to the Administrator server:

- **Keystore Provider** notify.transport.truststore.csp.jndi
- **SSL Client Provider** notify.transport.sslclient.jndi

and instances of these resource templates are installed on every node managed by that server.

Create TIBCO ActiveMatrix BPM Server Reference

Table 49 Welcome

Field	Description
Configure to Secure All Communication with SSL	Check to indicate that all communication channels will be secured with SSL. When checked, the SSL enabled checkboxes on the Browser Port, Internal HTTP Port, TIBCO Enterprise Message Service, database, and LDAP screens are checked. See SSL Prerequisites, page 94.

Table 50 ActiveMatrix BPM: Database Administrator

Field	Description
Create BPM Database Instance	Indicate that you want TIBCO Configuration Tool to create your TIBCO ActiveMatrix BPM database. Deselect if you want to manually create the database. If checked, the Test Connection button on the ActiveMatrix BPM: Runtime Database Configuration dialog is enabled. Default: Checked.
Database Driver	The database driver you want to use for the TIBCO ActiveMatrix BPM database.
URL	The connection string used in the JDBC connection to the Administrator database. Once you have selected the database driver, the URL field is automatically completed.
DBA Username	The username of the login that you want TIBCO ActiveMatrix BPM to use to connect to the TIBCO ActiveMatrix BPM database. TIBCO Configuration Tool automatically creates the username you specify.
DBA Password	The password for the specified username.
Confirm Password	The password for the specified username again to confirm it.
Tablespace Name	The name of the tablespace that is used to store the TIBCO ActiveMatrix BPM tables. Default: bpm_tablespace.
Test Connection	Click Test Connection to test the connection to your database.

Table 51 ActiveMatrix BPM: Runtime Database Configuration

Field	Description
URL	The URL used to connect to the TIBCO ActiveMatrix BPM database, depends on the third party driver installed.
Username	The username that you want TIBCO ActiveMatrix BPM to use to connect to the TIBCO ActiveMatrix BPM database. TIBCO Configuration Tool automatically creates the username you specify. Default: bpmuser.
Password	The password for the specified user login.
Confirm Password	The password for the specified user login again to confirm it.
Test Connection	Enabled if Create BPM Database Instance is not selected. Click to check that the supplied username and password can connect to the TIBCO ActiveMatrix BPM database.
Generate Scripts	Click if you want TIBCO Configuration Tool to extract the SQL scripts required for creating an TIBCO ActiveMatrix BPM database instance to the TIBCO configuration folder.

Table 52 ActiveMatrix BPM: Client Configuration

Field	Description
HTTP Work Presentation Host	The machine name that hosts Workspace. If the machine is different from the machine where you are running TIBCO ActiveMatrix BPM, then this should be a fully qualified domain name or IP address. The machine name you specify is also the name used in the default security certificate. Default: localhost
HTTP Port	The port for Workspace. Default: 8080.
Enable SSL	Specify to enable secure communication for Workspace and Openspace.
SMTP Host	The machine name that hosts the SMTP server that is used by Workspace. If the machine is different from the machine where you are running TIBCO ActiveMatrix BPM, then this should be a fully qualified domain name or IP address. Default: localhost.

Table 52 ActiveMatrix BPM: Client Configuration

Field	Description
SMTP Port	The port number used by the SMTP server. Default: 25.
Override BPM Configuration Folder	Check if you want to override the default BPM configuration folder.
Configuration Folder	The location of the BPM configuration folder.

Table 53 ActiveMatrix BPM: SizingConfiguration

Field	Description
Environment	The type of environment being set up. Choose from the options: **Development** and **Production**. The environment you choose in this field determines the default values provided for the remaining fields on this screen.
Database Connection Pool Size	Specifies the number of database connections available for each of the ActiveMatrix BPM DataSource resource templates. **Development default**: 10 **Production default**: 50
Database Statement Cache Size	Specifies the number of prepared statements that can be cached by each connection in the DataSource resource template pool. Caching prepared statements improves the performance but it uses more memory. **Development default**: 0 **Production default**: 100
Number of Process Engine Threads	Specifies the number of threads in the Process Engine background thread pool. **Development default**: 5 **Production default**: 18
Max Java PermGen Size	Specifies the maximum size for Java PermGen. **Development default**: 256 **Production default**: 1024

Table 53 ActiveMatrix BPM: SizingConfiguration (Cont'd)

Field	Description
Number of Message Threads	Specifies the range for the message threads. **Development default**: Core: 5 Maximum: 10 **Production default**: Core: 10 Maximum: 20
Java Heap Size	Specifies the range for the Java heap size. **Development default**: Minimum: 512 Maximum: 1024 **Production default**: Minimum: 1024 Maximum: 4096

Table 54 ActiveMatrix BPM: LDAP Configuration

Field	Description
Deploy Internal LDAP Server	Indicate that you want to use the internal LDAP Directory Server provided with TIBCO ActiveMatrix BPM. If checked the Port field is displayed. Default: Checked.
Port Number	The port number used by the internal LDAP server. Default: 10801
Use External LDAP Server	Indicate that you want to use an existing LDAP Directory Server. If checked, the LDAP provider details display. Default: Unchecked.
URL	The URL used to log in to the LDAP server. Default: `ldap\localhost:10389`
Base DN	The TIBCO ActiveMatrix Administrator user's distinguished name. Default: OU=system
Username:	The username of the TIBCO ActiveMatrix Administrator user. Default:uid=admin,OU=system
Password:	The password of the TIBCO ActiveMatrix Administrator user.
Test Connection	Click Test Connection to confirm connection to the LDAP Server.

Configure TIBCO ActiveMatrix BPM Server Node Type Reference

Table 55 Welcome

Field	Description
Configure to Secure All Communication with SSL	Check to indicate that all communication channels will be secured with SSL. When checked, the SSL enabled checkboxes on the Browser Port, Internal HTTP Port, TIBCO Enterprise Message Service, database, and LDAP screens are checked. See SSL Prerequisites, page 94.

Table 56 ActiveMatrix BPM: Administrator Server Configuration

Field	Description
Machine Name	The name of the machine on which the Administrator server is running. Default: *hostname*, where *hostname* is the machine on which TIBCO Configuration Tool is being executed.
Port	The port for the Administrator server. Default: 8120.
Username	The ID of the Administrator superuser. Default: root.
Password	The password of the Administrator superuser. Default: t.
Admin Server is SSL Enabled	Indicate that the Administrator server is SSL enabled and you want the TIBCO ActiveMatrix BPM node to use the same trust store that the Administrator server is using. Default: Unchecked.

Table 57 ActiveMatrix BPM: Host and Node Configuration

Field	Description
Node Type	The type of the node to create. One of: • BPM Node Type • Process Manager Node Type • Work Manager Node Type • Web Components Node Type Default: BPM Node Type
Node Name	The name of the TIBCO ActiveMatrix BPM node. Default: 8120.
Node Port	The port number used by the TIBCO ActiveMatrix BPM node. Default: 6031.
Host	The name of the machine running the TIBCO Host instance that TIBCO ActiveMatrix BPM node should use. Default: *hostname*, where *hostname* is the name of the machine that you specified when you ran the Create TIBCO ActiveMatrix BPM Server wizard.
HTTP Port	The number for the HTTP Port. Default: 8080
Environment Name	The name of the environment that contains the TIBCO ActiveMatrix BPM node. Default: *environmentname* where *environmentname* is the name of the environment you specified when you ran the Create TIBCO ActiveMatrix BPM Server wizard.
Override BPM Configuration Folder	Select this to specify the shared network folder where you want to store the TIBCO ActiveMatrix BPM properties files. Default: Checked.
Configuration Folder	Enabled if the Override BPM Configuration Folder checkbox is enabled. Type in the location of the shared network folder where you want to store the TIBCO ActiveMatrix BPM properties files.

Table 58 Summary

Field	Description
Session Scripts and Log Folder	The location where the server scripts and log folders are stored.
Create New ActiveMatrix BPM Server Node Type	Che ck to create a New ActiveMatrix BPM Server Node Type.

Chapter 7 TIBCO Configuration Tool Configurations

Topics

- TIBCO Configuration Tool Configuration, page 153
- Replicating a TIBCO ActiveMatrix Administrator Server on page 162

TIBCO Configuration Tool Configuration

A TIBCO Configuration Tool configuration consists of Ant build and property files. The files are stored in *CONFIG_HOME*/tct/*subfolder*/*date-time*/scripts, where *CONFIG_HOME* is the folder you specified in step 2. on page 97, and *subfolder* and the files are listed in Table 59. The settings in the property files are listed in Table 60.

Table 59 Configuration Subfolders and Files

Subfolder	Files
tpclshells	• build.xml Ant build file • build.properties Driver specification and JAR file location
tibcohost	• build.xml Ant build file • build.properties Property settings and locations of configuration files • tibcohost-instance.properties TIBCO Host instance configuration
admin	• build.xml Ant build file • build.properties Property settings and locations of configuration and property files • integration_create_admin.xml ActiveMatrix Administrator server bootstrap configuration • admin-instance.properties ActiveMatrix Administrator server configuration • admin-tibcohost-instance.properties TIBCO Host instance configuration that manages the node running the ActiveMatrix Administrator server • admin-envt-data.xml ActiveMatrix development environment configuration • cl_logservice_data.xml Log service configuration file • cl_payloadservice_data.xml Payload service configuration file • governance_integration_data.xml Monitoring service configuration file

Table 59 Configuration Subfolders and Files

Subfolder	Files
bpm	• admin-envt-data.xml: ActiveMatrix development environment configuration • admin-instance.properties: ActiveMatrix Administrator server configuration • admin-tibcohost-instance.properties: TIBCO Host instance configuration that manages the node running the ActiveMatrix Administrator server • bpm-installer.properties: BPM installation configuration • build.properties: property settings and locations of configuration and property files • build.xml: Ant build file • cl_logservice_data.xml: log service configuration file • cl_payloadservice_data.xml: payload service configuration file • data.xml: • governance_integration_data.xml: monitoring service configuration file • hpa-log4j.xml_template: • integration_create_admin.data.xml: ActiveMatrix Administrator server bootstrap configuration • node-log4j.xml_template

Table 60 Configuration Settings

Property	Description
TIBCO_HOME	ActiveMatrix installation location
tibco.config.mgmt.home	ActiveMatrix runtime configuration data folder
tcs.host	ActiveMatrix Administrator machine name
adminURL	ActiveMatrix Administrator server base URL
admin.enterprise.name	ActiveMatrix Administrator enterprise name
admin.ems.url	TIBCO Enterprise Message Service server URL for ActiveMatrix Administrator
admin.db.url	ActiveMatrix Administrator database URL

Table 60 Configuration Settings (Cont'd)

Property	Description
admin.instance.name	TIBCO Host instance name for ActiveMatrix Administrator
th.jmx.host	Name of the JMX host.
amx.th.hpa.jmx.port	TIBCO Host instance management port
tibcohost.qin.server.url	TIBCO Enterprise Message Service server URL for standalone TIBCO Host instance
tibcohost.trinity.tcs.url	TIBCO Credential Server URL for standalone TIBCO Host instance

Saving a TIBCO Configuration Tool Configuration

1. Run a wizard in TIBCO Configuration Tool (see Running the TIBCO Configuration Tool on page 97).
2. Specify configuration settings.
3. In the Session Scripts and Log Folder field of the Summary screen, accept the location of the configuration folder or click **Browse** to specify a new location.
4. Click the **Save** button. A confirmation dialog displays. The configuration is saved in the specified folder. The default folder is *CONFIG_HOME*`/tct/`*subfolder*`/`*date-time*`/scripts`, where *CONFIG_HOME* is the folder you specified in step 2. on page 97, and *subfolder* is `tpclshells`, `bpm`, `tibcohost`, or `admin`.
5. Click **OK** to dismiss the dialog.

TIBCO Configuration Tool Sample Configurations

Several sample configurations generated from running TIBCO Configuration Tool are available in subfolders of *TIBCO_HOME*`/amx/3.1/samples/configuration`:

- `create-admin-nossl` Creates an ActiveMatrix Administrator server using an in-process database.
- `create-admin-ssl` Creates an ActiveMatrix Administrator server with SSL enabled on for all communication channels.
- `create-tibcohost` Creates a TIBCO Host instance that is not bound to any ActiveMatrix Administrator server.

- `configure-thirdparty-driver` Configures an Oracle driver for use by an application deployed to an ActiveMatrix node.

Reusing a TIBCO Configuration Tool Configuration

A TIBCO Configuration Tool configuration can be reused on different machines and operating system platforms after you update the property files to account for the following differences between the originating machine and the target machine: machine name, ActiveMatrix installation location, ActiveMatrix runtime configuration data location, ActiveMatrix enterprise name, and operating system. Since the property files specify the machine name, you must always update the property files with the target machine name.

Running TIBCO Configuration Tool Scripts

1. Make the required changes in the property files.
2. Install and configure Ant.
3. Open a command line window in one of the configuration subfolders.
4. Run `ant [-logfile` *logfile*`] -f build.xml`. The actions occur in the following subfolders:
   - `tpclshells` Adds plug-ins to *TIBCO_HOME*`\components\shared\1.0.0\plugins`.
   - `tibcohost` Creates the `tibcohost\`*hostName* data folder, where *hostName* is the name you specified for the TIBCO Host instance.
   - `admin` Creates the `admin\`*enterpriseName* data folder and the `tibcohost\`*hostname* data folder, where *hostName* is the name you specified for the TIBCO Host instance and *enterpriseName* is the name you specified for the enterprise.

Configure Third-Party Driver Properties

To configure drivers, set the following properties in `tpclshells/build.properties`:

Properties	Description
shell.name	Package name of the driver. See Table 61 on page 157.
shell.version	Driver version.
source.jar.folders	Driver JAR file location.

Properties	Description
machine.model.location	Machine model file.
TIBCO_HOME	ActiveMatrix installation location

Table 61 Shell Names and Versions

Driver	Shell Name	Shell Version
Oracle Database 11g	com.tibco.tpcl.gen.oracle.jdbc	11.1.0.112100
Oracle Database 10g	com.tibco.tpcl.gen.oracle.jdbc	10.2.0.112100
Microsoft SQL Server 2.0.0	com.tibco.tpcl.gen.sqlserver.jdbc	2.0.0.210
JMS Sonic	com.tibco.tpcl.gen.sonic.jms	6.1.0.620
JMS WebSphere	com.tibco.tpcl.gen.websphere.jms	7.0.0.001
EJB JBoss 4.2.2	com.tibco.tpcl.gen.jboss.ejb	4.2.2.510
EJB JBoss 5.0.1	com.tibco.tpcl.gen.jboss.ejb	5.0.1.510
EJB WebLogic 9.2.0	com.tibco.tpcl.gen.weblogic.ejb	9.2.0.1010
EJB WebLogic 10.0.0	com.tibco.tpcl.gen.weblogic.ejb	10.0.0.1010
EJB WebSphere 6.1.0	com.tibco.tpcl.gen.websphere.ejb	6.1.0.710
EJB WebSphere 7.0.0	com.tibco.tpcl.gen.websphere.ejb	7.0.0.710

In general, you must modify the folder locations in the following properties: *TIBCO_HOME*, source.jar.folders, and Machine.model.location.

Update the following properties to conform to target operating system path conventions.

Property	Description
source.jar.folders	Driver JAR file location.
TIBCO_HOME	ActiveMatrix installation location.
machine.model.location	Machine model file.

Create TIBCO Host Instance Properties

Use the scripts in the folder `tibcohost` to create a TIBCO Host instance on a new machine or an additional TIBCO Host instance on the machine where an ActiveMatrix Administrator server is running.

For creating an instance on a new ActiveMatrix machine, only `build.properties` needs to be updated. Otherwise, you must modify configuration properties in `tibcohost-instance.properties`. For example, to create an additional TIBCO Host instance on the same machine, update the amx.th.hpa.jmx.port from the default port number 6001.

The changes described here are for a specific individual differences. In an environment with multiple differences, the property changes are additive. For example, to create an additional TIBCO Host instance with a different enterprise name, include all the property changes listed in Additional TIBCO Host Instances on page 158 and Enterprise Name on page 158.

First TIBCO Host instance

To create a standalone TIBCO Host instance, update the following properties before running the script.

File Name	Property	Description
build.properties	amx.th.instance.name	TIBCO Host instance name
	tibcohost.jmx.host	TIBCO Host instance machine name

Additional TIBCO Host Instances

File Name	Property	Description
build.properties	amx.th.instance.name	TIBCO Host instance name
tibcohost-instance.properties	amx.th.hpa.jmx.port	TIBCO Host instance management port

Enterprise Name

File Name	Property	Description
build.properties	tibcohost.enterprise.name	ActiveMatrix enterprise name

Installation Location

Update the following property when ActiveMatrix software is not installed onto the default location.

File Name	Property	Description
build.properties	*TIBCO_HOME*	ActiveMatrix installation location

Configuration Folder Location

Update following property when using a different configuration data folder location.

File Name	Property	Description
build.properties	tibco.config.mgmt.home	ActiveMatrix runtime data configuration location

In addition to the changes listed in Additional TIBCO Host Instances on page 158, update the following properties to conform to target operating system path conventions.

File Name	Property	Description
build.properties	*TIBCO_HOME*	ActiveMatrix installation location
	tibco.config.mgmt.home	ActiveMatrix runtime data configuration location

Create ActiveMatrix Administrator Server Properties

Machine Name

Update the following properties with the correct machine name.

File Name	Property	Description
build.properties	tcs.host	Machine on which ActiveMatrix Administrator runs.
admin-instance.properties	adminURL	ActiveMatrix Administrator server URL

Enterprise Name

Update the following property if the ActiveMatrix enterprise name has changed.

File Name	Property	Description
build.properties	admin.enterprise.name	ActiveMatrix enterprise name

Installation Location

Update following property when ActiveMatrix software is installed in a different location.

File Name	Property	Description
build.properties	*TIBCO_HOME*	ActiveMatrix installation location

Configuration Folder Location

Update following property when using a different configuration data folder location.

File Name	Property	Description
build.properties	tibco.config.mgmt.home	ActiveMatrix runtime data configuration location

Update the following properties in addition to the changes required for machine name to conform to target operating system path conventions.

File Name	Property	Description
build.properties	*TIBCO_HOME*	ActiveMatrix installation location
	tibco.config.mgmt.home	ActiveMatrix runtime data configuration location

Replicating a TIBCO ActiveMatrix Administrator Server

Administrator server requirements:

- Use an external Oracle or Microsoft SQL server database.

Machine requirements:

- *TIBCO_HOME* is the same location.

  For example, if the location of `TIBCO_HOME` on the primary machine is `C:\Program File\tibco\amx` then the location of `TIBCO_HOME` on the replication machine should also be `C:\Program File\tibco\amx`.
- A shared file system is mounted with the same path.
- Ant is installed and configured.

Primary Machine

1. Run TIBCO Configuration Tool and choose the Create TIBCO ActiveMatrix Administrator Server Wizard Reference wizard.
   a. In the Internal HTTP Settings screen, select the **Use HTTP Load Balancer for Internal HTTP Communication** checkbox and specify the load balancer URL. The load balancer should have sticky connections so that the client session context is maintained.
   b. In the Database Details screen, uncheck the checkbox for `Use Default In-Process Database` checkbox and select the appropriate driver for your database from the Database Driver drop down list. Specify the external database details making sure that the Database URL field contains a DNS name. See ActiveMatrix Administrator Server Database for more information.
   c. In the Credential Server Details screen, ensure the Machine Name is set to 0.0.0.0.
2. Save the configuration (see Saving a TIBCO Configuration Tool Configuration on page 155).
3. Open a terminal window.
4. Change to *CONFIG_HOME*`/tct/admin/`*date-time*`/scripts`.

5. Edit `integration_create_admin_data.xml` as follows:
   a. Set the `sharedWorkFolder` attribute of the `AdminConfigFolders` element to a folder in the shared file system.
   b. Set the `location` attribute of the `SCMDetails` element to the same value as `sharedWorkFolder` attribute.
   c. Set value of the `Svar` element named `ArtifactServerInternalSharedLocationSvar` to the same value as `sharedWorkFolder` attribute.
   d. Save the file.
6. Copy the *CONFIG_HOME*`/tct/admin/`*date-time*`/scripts` folder from the primary machine to the same location on the replicated machine.

   It is recommended that you create an additional backup copy of this folder incase you need to use it when recovering from configuration errors during the replication process.
7. Run `ant [-logfile` *logfile*`]`.

   A TIBCO Host instance named SystemHost is created and started. A node named SystemNode is created in the environment named SystemEnvironment and started.

Replicated Machine

8. If you have installed third-party drivers on the primary machine before running the Create TIBCO ActiveMatrix Administrator Server Wizard Reference wizard, install the drivers on the replicated machine using the Configure Third-Party Driver Wizard Reference.
9. Open a terminal window.
10. Edit *TIBCO_HOME*`/administrator/3.1/scripts/instance-mgmt.xml`:
    a. Remove the `configure.tcs` and `start.tcs` targets from the `deploy-admin` target's `depends` attribute; replace the following line:

```
<target name="deploy-admin" depends="-define-macros, create-dir-structure,
bootstrap.admin.archive.th, configure.tcs, start.tcs, updateCallbackUrlTrustConfig,
create.admin.cli.keystore, install.artifact.server, deploy.admin.ui.dashboard"/>
```

with

```
<target name="deploy-admin" depends="-define-macros, create-dir-structure,
bootstrap.admin.archive.th, updateCallbackUrlTrustConfig,
create.admin.cli.keystore, install.artifact.server, deploy.admin.ui.dashboard"/>
```

11. Edit *TIBCO_HOME*`/administrator/3.1/scripts/governance/governance_integration_build.xml:`

Remove the target `add.factory.aggregator.config` from the `setup` target's `depends` attribute.

12. Navigate to the *CONFIG_HOME*`/tct/admin/`*date-time*`/scripts` folder.
13. Edit the files:
    a. `admin-envt-data.xml` Comment out the `Environment` element.
    b. `build.properties` Update the `th.jmx.host` and `th.jmx.url` properties with the host name of the replicated instance. Ensure that the `tcs.host` property is set to 0.0.0.0.
    c. `cl_logservice_data.xml`, `cl_payloadservice_data.xml`, `governance_integration_data.xml`, and `integration_create_admin_data.xml`

       Replace all instances of `SystemNode` with another node name (for example, *SystemNodeReplica)* and all instances of `SystemHost` with another host name (for example, *SystemHostReplica)*.
    d. admin-instance.properties Update the `adminURL` property with the host name of the replicated instance.
14. Run `ant [-logfile` *logfile*`]`.

    A TIBCO Host instance named *SystemHostReplica* is created and started. A node named *SystemNodeReplica* is created in the environment named SystemEnvironment and started. The replicated Administrator server runs on *SystemNodeReplica*.

When you log in to either of the Administrator servers (or access the load balancing URL if one is configured for the external HTTP connection), there will be two hosts in the **Infrastructure > Hosts** screen and two nodes in the SystemEnvironment environment in the **Infrastructure > Nodes** screen. Requests can be processed by either of servers. If one node is unavailable, the other will able to process requests.

In case of configuration errors during the replication process, you have to first delete the replicated TIBCO ActiveMatrix Administrator server instance before re-trying the replication process. See Deleting a TIBCO ActiveMatrix Administrator server instance for more informtion.

Deleting a TIBCO ActiveMatrix Administrator server instance

Follow these steps to delete a TIBCO ActiveMatrix Administrator server instance:

1. Make sure you have permission to force delete applications. See *Administration* for more information.
2. These steps should not be performed on the same machine that is running the replicated instance that you want to delete. For example, if the Administrator server instance to be deleted is running on *MachineA*, you must perform these steps on a different machine.
   a. On the primary machine, edit *CONFIG_HOME*`/admin/`*EnterpriseName*`/samples/deleteAdminInstance_data.xml`.

      Specify the host name, `${host.name}` and the node name, `${node.name}` for the replicated instance that you want to delete.

   b. From the primary machine, navigate to the *CONFIG_HOME*`/admin/`*EnterpriseName*`/samples` folder and execute `ant -f deleteAdminInstance_build.xml`.

   The TIBCO ActiveMatrix Administrator server instance is deleted and the host unbound.
3. On the replicated machine, manually stop the `tibcohost` process.

When re-attempting the replication process make sure you use the copy of the scripts saved in step 6 of the Replicating a TIBCO ActiveMatrix Administrator Server process and follow the replication process as outlined.

Chapter 8 Configuring BPM in Silent Mode

Topics

- Configuring BPM in Silent Mode, page 167

Configuring BPM in Silent Mode

To configure BPM in the silent mode, you must install the product in the silent mode.

Configuring the product in silent mode requires two machines and involves the following:

1. Running TCT in the GUI mode on machine 1 and creating the required configuration.
2. Installing the product in silent mode on Machine 2 to generate the silentinstall utility. Ensure that the TIBCO_HOME and CONFIG_HOME you specify on Machine 1 and Machine 2 are exactly the same.
3. Coping the configuration from machine 1 to Machine2
4. Running the silentinstall utility to complete the configuration on Machine 2.

Ensure that you meet the following criteria when preparing to perform a silent install and config: (In other words, when you are performing the install and config on Machine 1 in GUI mode, ensure that the values you specify are those that will be used by Machine 2.)

- The TIBCO_HOME and CONFIG_HOME directories on both the machines must be the same.
- Specify the path of the JDBC driver on the target machine. Machine 2
- Specify the machine name of the target machine. Machine 2
- Use the TIBCO ActiveMatrix BPM database that will be used by Machine 2.

Machine 1: Install and run TCT in GUI mode

Do the following:

1. Install TIBCO ActiveMatrix BPM using the **Install BPM, Administrator & TIBCO Host** profile. See Installing the Product on page 46 for details.
2. Using TIBCO Configuration Tool:

a. Run the **Configure Third-Party Driver** wizard to register the JDBC drivers for your TIBCO ActiveMatrix BPM database. From the **Summary** dialog:

—click **Save** to save the configuration information in the TIBCO Configuration folder. The configuration information is stored in `\tct\tpclshells`. See Running the TIBCO Configuration Tool on page 97 for information on how to run the wizard.

—click **Configure**. You must click **Configure** as well as **Save**, otherwise you will not be able to complete some of the dialogs when you run the **Create TIBCO ActiveMatrix BPM Server** wizard as some of the fields will be empty.

b. Run the **Create TIBCO ActiveMatrix BPM Server** wizard to create TIBCO ActiveMatrix BPM; see Create TIBCO ActiveMatrix BPM Server Reference on page 145 for details. From the **Summary** dialog:

—click **Save**. The TIBCO Configuration Tool saves the configuration information in the TIBCO Configuration folder, for example `\tct\bpm`.

—click **Cancel** to exit the wizard.

The location of the configuration information is used during the silent installation of TIBCO ActiveMatrix BPM.

Machine 2: Install product in silent mode

1. Create the AMX BPM database, if it has not been created earlier.
2. Edit the silent file and Install the product in silent mode by invoking TIBCOUniversalInstaller -silent on a console window. See Install in Silent mode on page 50 for details.

Machine 2: Copy CONFIG_HOME directory

1. Copy the CONFIG_HOME directory to Machine 2. Ensure that the absolute path is exactly the same on both the machines.
2. Check the scripts are located in the folder where you stored config info.

Machine 2: Run silentinstall utility

1. Navigate to the location of the silentinstall utility on a console window.

2. Run the following commands in the order specified:

   a. `silentinstall tpcl` *tct_configuration_folder* where *`tct_configuration_folder`* is the path to the folder that stores the scripts created when you ran the **Configure Third-Party Driver** wizard in step 2, for example `\tct\tpclshells\`*`date-time`*`\scripts`

   b. `slientinstall bpm` *tct_configuration_folder* where *`tct_configuration_folder`* is the path to the folder that stores the the scripts created when you ran the **Create TIBCO ActiveMatrix BPM Server** wizard in step 2, for example `\tct\bpm\`*`date-time`*`\scripts`

   The first command sets up the third party driver and the second command configures and deploys TIBCO ActiveMatrix BPM.

   Once these scripts have run, `Build Successful` should be returned and the silent installation of TIBCO ActiveMatrix BPM is complete.

PART FOUR UPGRADE

Chapter 9 Upgrading Your System

This chapter describes how to upgrade TIBCO ActiveMatrix BPM using the upgrade utility.

Topics

- Overview, page 173
- Checks Before Performing an Upgrade, page 176
- The upgrade Utility, page 179
- Performing an Upgrade of TIBCO ActiveMatrix BPM, page 181
- Troubleshooting, page 184

Overview

Upgrading TIBCO ActiveMatrix BPM to 1.3.0 involves upgrading the runtime objects: TIBCO ActiveMatrix BPM application (amx.bpm.app), BPMNode, TIBCO Host instances, TIBCO ActiveMatrix Administrator servers, and TIBCO ActiveMatrix BPM Database.

This chapter describes how to upgrade TIBCO ActiveMatrix BPM 1.2.0 runtime objects to release 1.3.0. If your current installation is not 1.2.0, you must first upgrade to release 1.2.0. Refer to the upgrade instructions provided in the *TIBCO ActiveMatrix BPM Installation and Configuration* guide for release 1.2.0.

Upgrade will fail if you have reconfigured the Administrator server in any of the following ways since creating the server with TIBCO Configuration Tool:

- Deleted the initial superuser or changes the superuser password.
- Changed the port of the external HTTP connector or enabled or disabled SSL for the connector.

Upgrading a Distributed Component Implementation of TIBCO ActiveMatrix BPM

If you have a distributed component implementation of TIBCO ActiveMatrix BPM, you must:

1. On each remote machine in the cluster that has TIBCO ActiveMatrix BPM installed on it, you must upgrade the TIBCO Host.

On a machine that has TIBCO ActiveMatrix Administrator installed, you need not upgrade the TIBCO Host separately as the TIBCO Host on this machine will be upgraded when you upgrade the Administrator.

Perform an upgrade as described in Performing an Upgrade of TIBCO ActiveMatrix BPM on each of the machines in the cluster that have TIBCO ActiveMatrix BPM installed on them.

You must use the `upgrade all` command to perform the upgrade. See Performing an Upgrade of TIBCO ActiveMatrix BPM on page 181 for details.

Runtime Object State

Runtime object state consists of configuration data and binary executables. An upgrade process converts the format of runtime object to the current version (1.3.0/3.1.5). The locations of runtime object state are:

- **TIBCO Host Instance**
  - SystemHost
    BPM_CONFIG_HOME/tibcohost/Admin-*enterpriseName-serverName*
  - Standalone *CONFIG_HOME*/tibcohost/*instanceName*
- **ActiveMatrix Administrator Server** *CONFIG_HOME*/admin/*enterpriseName*, contains Administrator server files and the in-process database (if selected as the Administrator server database).
- **BPMNode** *CONFIG_HOME*/tibcohost/*instanceName*/nodes/*nodeName* and *CONFIG_HOME*/admin/*enterpriseName* where,
  - *enterpriseName* and *serverName* are the names you specified when you created the Administrator server,
  - *instanceName* is the name you specified when you created the TIBCO Host instance, and
  - *nodeName* is the name specified when you created the node.

Upgrade Impact

You can upgrade to this version of TIBCO ActiveMatrix BPM from an existing installation of TIBCO ActiveMatrix BPM. No configuration is required prior to an upgrade and upgrade does not affect any of the configuration of your existing installation. For example, if an upgrade is performed:

- All existing process instances deployed on your existing installation will still be available.
- Process instances and work items with a status of In Progress continue to be processed.
- Configured LDAP containers, users and organization memberships will still be available.

Depending on the size of your system, upgrade can take some time. You should allow sufficient time for the upgrade to be performed.

This section describes the operational impact of upgrading the ActiveMatrix Administrator Server, nodes (BPMNode), amx.bpm.app application, ActiveMatrix BPM Database and TIBCO Host instances.

- ActiveMatrix Administrator Server While the ActiveMatrix Administrator server is being upgraded, deployed application will continue to run without service interruption. However, the Administrator server itself will be unavailable, which means you cannot perform functions such as deploying new applications and managing existing applications, and managing infrastructure.
- TIBCO Host Instances and Nodes While a TIBCO Host instance and its nodes are being upgraded, the applications deployed on the nodes will be stopped. As a result, clients of those applications will experience service interruption.
- ActiveMatrix BPM Database

Checks Before Performing an Upgrade

Ensure that you check the following before upgrading TIBCO ActiveMatrix BPM:

- **Installer account** - The installer account used to perform an upgrade must have the appropriate privileges required for that platform. Installer Account on page 5 describes the installer account you should use when upgrading TIBCO ActiveMatrix BPM.
- Installer log file - The location of the upgrade log files. See Installer Log File on page 5 for details.
- Shutdown the existing TIBCO ActiveMatrix BPM server that you wish to upgrade.

It is important that you shutdown the existing TIBCO ActiveMatrix BPM before upgrading, otherwise the upgrade will fail.

- Remove any indexes added to the BPM Database.

  If you have added any indexes to your BPM database, these should be removed before you upgrade. This is because, as part of the upgrade, a new database schema is supplied that may include new indexes. If the new indexes have the same name as your original indexes, this could result in duplicate indexes which, in turn, would adversely effect the performance of TIBCO ActiveMatrix BPM.
- Optionally, back up your TIBCO Workspace configuration files. See Backup Procedure for TIBCO Workspace, page 177 for details.
- Back up your system. See Backup and Restore for detailed instructions to back up your ActiveMatrix BPM system and restore the system from a backup.

  To back up your ActiveMatrix BPM system, copy the following to a different location (possibly on a different machine):

Make sure that the following are in a state where a back-up can be performed. This means they should be either shutdown or offline, as applicable.

  — the machine(s) where TIBCO ActiveMatrix BPM has been installed.

  — the TIBCO_HOME and CONFIG_HOME directories for the TIBCO ActiveMatrix BPM installation. If the BPM configuration files are on a different location, you must back up these files as well.

  — the TIBCO ActiveMatrix BPM database. You must back up all the databases that contain BRM, EC, WP, PVM, and DE database tables. Refer to the

documentation supplied with your database for information on to take a backup.

— the TIBCO ActiveMatrix Administrator database. Refer to the documentation supplied with TIBCO ActiveMatrix Administrator for information on how to do this.

— the TIBCO EMS server. Refer to the documentation supplied with TIBCO EMS for information on performing back-ups.

Repeat the process for all the machines in the cluster that have TIBCO ActiveMatrix BPM installed on them.

Backup Procedure for TIBCO Workspace

If you are using a Workspace custom configuration, you may need to back up the TIBCO Workspace configuration files to ensure that the custom configuration is not lost when you upgrade the software. Also, if you are running a custom WCC application, you may need to repackage and redeploy your applications to pick up any changes in the upgraded software.

The procedure differs depending on whether you are using the default Workspace application or a custom WCC application, as outlined in the following sections.

Default Workspace Application on the Runtime Machine

When you choose to upgrade your software, the installer overwrites all the existing Workspace configuration files on the runtime machine. If you are using the default Workspace application, you need to back up files before running the installer to upgrade the software, as described:

- If you had made configuration changes to Workspace using the Configuration Administrator, these changes are saved in the database. Consequently, you need NOT back up any files. When you start Workspace after upgrading the software, it will read the configuration from the database.
- If you had made configuration changes by directly modifying files on the runtime machine (for example, config.xml, userAccess.xml, and so on), you must back up those files prior to running the installer. After completing the upgrade, replace the installed configuration files with the backed up configuration files.

Custom WCC Application on Your Development Machine

When you upgrade the software, the installer installs the design-time WCC software on your development machine. Upgrading the design-time WCC software will not affect any custom WCC applications that were previously developed. However, to pick up the changes available in the upgraded software, you need to perform the following tasks:

1. Create a new WAR file for your custom application.
2. Copy the WAR file to TIBCO Business Studio.
3. Create a DAA for the application.
4. Undeploy the previously deployed custom application using TIBCO Administrator.
5. Deploy the DAA created in Step 3. to the runtime node using TIBCO Administrator.

See *TIBCO Workspace Configuration and Customization* guide for details on how to deploy a custom application.

The *upgrade* Utility

The **upgrade** utility is called:

- On **Windows**: **upgrade.bat**
- On **UNIX/Linux**: **upgrade**

and is located in `\bpm\1.3\scripts\upgrade` and is created when you install the new version of TIBCO ActiveMatrix BPM.

You must install the new version of TIBCO ActiveMatrix BPM in the existing installation directory of the TIBCO ActiveMatrix BPM that you want to upgrade, using the **Install BPM, Administrator & TIBCO Host** profile.

The **upgrade** utility uses the configuration information from your existing installation of TIBCO ActiveMatrix BPM to configure the upgraded TIBCO ActiveMatrix BPM. The configuration information is located in the TIBCO Configuration Folder that stores the scripts that are generated by TIBCO Configuration Tool. For example, `\tct\bpm\`*`date-time`*`\scripts` where *`date-time`* is the date and time the scripts were created when you first installed TIBCO ActiveMatrix BPM.

The **upgrade** utility provides a script that allows you to upgrade the individual components of TIBCO ActiveMatrix BPM. The table below describes the components that are updated using the upgrade script. The components should be upgraded in the order specified below:

Component	Upgrade Command
TIBCO Host	`upgrade tibcohost`
TIBCO Administrator	`upgrade admin`
TIBCO ActiveMatrix BPM Node	`upgrade bpmnodes`
TIBCO ActiveMatrix BPM Database	`upgrade bpm-database`
TIBCO ActiveMatrix BPM Application	`upgrade bpm-app`

If you are upgrading from release version 1.0.3, you must run the `manual_upgrade_1.0.3.sql` after upgrading to release version 1.1.1. You can then proceed to manually upgrade your system to 1.2.0 and finally to 1.3.0.

The following table describes the commands that you can run using the **upgrade** utility:

Command	Runs the following...
`upgrade all`	`upgrade tibcohost`
	`upgrade admin`
	`upgrade bpmnodes`
	`upgrade bpm-database`
	`upgrade bpm-app`
`upgrade platform`	`upgrade tibcohost`
	`upgrade admin`
	`upgrade bpmnode`
`upgrade bpm`	`upgrade bpm-database`
	`upgrade bpm-app`

TIBCO recommends that you use the `upgrade all` command and allow the **upgrade** utility to upgrade all the components at the same time. However, you can run the upgrade commands individually. This may be necessary, for example, if a problem occurs during upgrade that causes an upgrade script to exit. For example, when you are prompted by the upgrade script to enter information, you must type the information exactly as it is required. Otherwise, this can cause the upgrade script to exit. If this happens, you can run the rest of the upgrade scripts individually to complete the upgrade.

Troubleshooting describes example scenarios and possible resolutions to complete the upgrade process.

Performing an Upgrade of TIBCO ActiveMatrix BPM

This section describes performing an upgrade using the `upgrade all` command. However, you can run the upgrade scripts individually, see The upgrade Utility, page 179.

Depending on the configuration and the number of applications deployed, upgrade can take varying amounts of time to complete.

For example, upgrading a lightly-loaded, single node could take about an hour. And a lightly-loaded, high availability system could take anything in the range of 2 - 3 hours to complete.

Ensure that you allow sufficient time for the upgrade to be completed.

On the machine that requires upgrading, do the following:

1. Install TIBCO ActiveMatrix BPM using the **Install BPM, Administrator & TIBCO Host** profile; see Installing the Product on page 46 for details. During installation, ensure that you select the following to successfully upgrade your system:
   - In the **TIBCO Installation Home** dialog, select **Choose an Existing TIBCO_HOME**. Browse to the existing installation directory of the TIBCO ActiveMatrix BPM that you want to upgrade.
   - Choose to run TIBCO Configuration Tool, so make sure that **Launch TIBCO Configuration Tool** is checked before clicking **Finish** to install TIBCO ActiveMatrix BPM.
2. Restart all instances of TIBCO ActiveMatrix BPM after the installation completes.
3. Open a command prompt and navigate to the location of your **upgrade** file, for example `\bpm\1.3\scripts\upgrade`
4. Run the following:

```
upgrade all tct_output_folder
```

where *`tct_output_folder`* is the TIBCO Configuration Folder that stores the scripts that are generated by TIBCO Configuration Tool. For example, `\tct\bpm\`*`date-time`*`\scripts` where *`date-time`* is the date and time the scripts were created when you first installed TIBCO ActiveMatrix BPM.

5. The script prompts you to shutdown the TIBCO Host instances and all node processes

```
[input] stop processes? (yes|no) :
```

Enter `yes` to continue. Upgrade shuts down TIBCO Host, upgrades and restarts it. The script informs you when this has completed.

```
[echo] TIBCO Host instance has been upgraded.
```

6. The script prompts you to confirm that your system is running before it continues.

```
[input] Please wait for system to finish starting then press return to continue:
```

If you can login to your TIBCO Administrator web interface and all TIBCO ActiveMatrix BPM applications are listed with a status of **Running**, you can continue with the upgrade. Press **Return**.

7. The script prepares to upgrade TIBCO ActiveMatrix Administrator. Upgrade has to interrupt service for the applications running on the nodes.

```
[input] interrupt service? (yes|no) :
```

8. Type `yes` to continue. Upgrade shuts down TIBCO ActiveMatrix Administrator, upgrades and restarts it. The script prompts you to confirm that the TIBCO ActiveMatrix BPM nodes are running before it continues.

```
[input] Please wait for all the AMX BPM Nodes to finish starting then press return
to continue:
```

9. Press **Return**. Upgrade now needs to upgrade the TIBCO ActiveMatrix BPM database.

```
Automatically upgrade database? (yes, no)
```

To:

— allow the script `to automatically upgrade the` TIBCO ActiveMatrix BPM database, type `yes`. Go to step 10.

— manually upgrade the TIBCO ActiveMatrix BPM database, type `no`. If you type `no`, the **upgrade** utility generates the two required SQL upgrade scripts:

—`/bpm/database/WorkManagerUpgrade.sql`

—`/bpm/database/ProcessManagerUpgrade.sql`

and prompts you as follows:

```
[input] Database upgraded? (yes, no) :
```

Your DBA must execute these scripts as the BPM User against the TIBCO ActiveMatrix BPM database before you can continue with the upgrade process. Once your TIBCO ActiveMatrix BPM database has been upgraded, type `yes`.

10. Upgrade upgrades the TIBCO ActiveMatrix BPM application.
11. Once these scripts have run, `Build Successful` should be returned and the upgrade of TIBCO ActiveMatrix BPM is complete.
12. In TIBCO ActiveMatrix Administrator, select **Infrastructure** > **Nodes**. The BPMNode may show an **Out of Sync** status after the upgrade. In the **Configuration** > **Features** section for the BPMNode, one or more features may have a status **Marked for Uninstall**. Click **Apply** to synchronize the node.

Troubleshooting

When running the upgrade utility, if the script exits with an error on or before upgrading all the components, depending on the error, it may be possible to complete the upgrade process by running the individual commands rather than running an upgrade all again. Following example scenarios describe the scripts to be run when the upgrade scripts exits before completion.

Scenario 1

If you have run `upgrade all`, and the script exits after upgrading TIBCO Host but before upgrading TIBCO Administrator, you could run the following commands in the order specified below:

1. `upgrade admin` - to upgrade TIBCO Administrator
2. upgrade bpmnodes - to upgrade TIBCO ActiveMatrix BPM Node
3. `upgrade bpm` - to upgrade TIBCO ActiveMatrixDatabase and TIBCO ActiveMatrix Application

Scenario 2

If you have run `upgrade all`, and the script exits after upgrading TIBCO ActiveMatrix BPM Node but before upgrading TIBCO ActiveMatrix BPM Database, you could run the following commands in the order specified below:

1. `upgrade bpm-database` - to upgrade TIBCO ActiveMatrix BPM Database
2. `upgrade bpm-app` - to upgrade TIBCO ActiveMatrix BPM Application

Scenario 3

After running `upgrade all`, the logs show that the upgrade failed. However, the TIBCO ActiveMatrix Administrator lists the newer version of the BPMNode, indicating that the BPMNode has been upgraded successfully.

Sometimes, previously failed user application undeployments result in old features or applications that cannot be removed in the final cleanup, and cause the product upgrade to fail.

PART FIVE POST INSTALLATION

Chapter 10 Post-Installation Tasks

This chapter describes the post-installation tasks you must perform once you have finished installing TIBCO ActiveMatrix BPM.

Topics

- Install the Mediation Product Application, page 187
- Reconfigure Your JVM, page 188
- Using Transaction Recovery with Oracle, page 189
- Set Transaction Verification Property for Microsoft SQL Server, page 190

Install the Mediation Product Application

The Mediation product application is not deployed by default on the BPMNode when you install ActiveMatrix BPM. It implements mediation for ActiveMatrix BPM. Once you have installed ActiveMatrix BPM, you must manually deploy the Mediation product application.

Mediation involves virtualizing and managing service interactions between communicating participants. Refer to the Administration documentation for your runtime environment for more information on mediation.

To do this:

1. From the Administrator interface in BPM runtime, go to **Applications**.
2. Add a new application named **com.tibco.amx.it.mediation.app** using the **TIBCO ActiveMatrix Mediation Implementation Type Application Template**.
3. Distribute the application to the **BPM Node**.
4. Deploy the application by selecting **Deploy** with **Start**.

Once the above application is running, you can deploy the mediation samples to check that mediation is now available.

Refer to the Administration documentation for your runtime environment for more information on adding, distributing and starting your application.

Reconfigure Your JVM

To reconfigure your JVM:

1. Increase the JVM permgen size:
   - **Windows** Add `set ANT_OPTS=-Xmx1024m -XX:MaxPermSize=256m -XX:PermSize=128m` to `%USERPROFILE%\antrc_pre.bat`
   - **UNIX** Add `export ANT_OPTS="-Xmx1024m -XX:MaxPermSize=256m -XX:PermSize=128m` to `~/.antrc`
2. Confirm the value of `ANT_OPTS` before executing CLI scripts from the command prompt.

Using Transaction Recovery with Oracle

(This only applies to Oracle)

If you want to use transaction recovery, you must grant the BPM user the correct privileges. To do this, ask your Oracle database administrator to execute the following commands as a user that has the SYSDBA permission:

```
GRANT SELECT ON sys.dba_pending_transactions TO user
GRANT EXECUTE ON sys.dbms_xa TO user
GRANT SELECT ON sys.dba_2pc_pending TO user
```

For more information, see the SOA documentation about Transaction Recovery.

Set Transaction Verification Property for Microsoft SQL Server

Microsoft SQL Server currently cannot handle the scenario where commits return successfully (in XA mode) even when the transaction has not completed. Consequently, duplicate work items can occur when the BPM runtime is running against a Microsoft SQL Server.

There is a case open with Microsoft for this issue (Case Reference 112010377500682). You must set the following property until Microsoft provides a fix for this issue. Once the fix is applied, this property must be removed.

1. Log in to TIBCO ActiveMatrix Administrator as root user and select **Infrastructure > Nodes**.
2. Select the node BPMNode and click the **Configuration** tab.
3. Select the link **JVM Arguments**.
4. Under the **Properties** heading, click **Add** to add a new JVM property.
5. Enter the property name as **`com.tibco.pvm.txVerification.enable`** and value as **`true`**.
6. Click **Save** to save the changes.
7. Stop and Restart the BPMNode

Chapter 11 Recovering from a Failed Installation

This chapter describes the steps to sanitize your machine and recover from a failed installation.

Topics

- Sanitizing After a Failed Installation, page 192

Sanitizing After a Failed Installation

An installation process can fail at various stages and the installer may not be able to clean up the environment before exiting. It is recommended that you clean up the environment manually before trying to re-install the product.

Consider a simple environment with a single node (BPMNode) on a single host. To sanitize this environment after a failed installation, perform the following steps in the specified order.

1. Shutdown TIBCO Configuration Tool (TCT).
2. Stop any processes running from CONFIG_HOME. For example, **tibcohost**, **tibamx_SystemNode**, and **tibamx_BPMNode**.
3. Delete the BPM configuration directory specified during the installation. For example, if you chose to use the default configuration directory when installing on Windows, delete the folder `C:\ProgramData\amx-bpm\tibco\data`.

The above steps are applicable for a single node environment. Similar steps may be applied to clean up an active-active or a distributed environment. The actual steps however will have to be customised to the environment that needs to be cleaned.

Chapter 12 Uninstalling TIBCO ActiveMatrix BPM

This chapter explains how to uninstall TIBCO ActiveMatrix BPM from your computer.

Topics

- Uninstalling TIBCO ActiveMatrix BPM on page 194

Uninstalling TIBCO ActiveMatrix BPM

If you want to uninstall TIBCO ActiveMatrix BPM from your system, perform the following steps:

1. Stop the TIBCO Host instance, node processes, and TIBCO Business Studio.
2. Use one of the methods described below to uninstall TIBCO ActiveMatrix BPM:
   - **UNIX/Linux**: Use the uninstaller provided with TIBCO ActiveMatrix BPM.
   - **Windows**, either:
     - Use the uninstaller provided with TIBCO ActiveMatrix BPM, see Using the Uninstaller on page 194 or
     - Remove the installation using the **Add/Remove Programs** option on your PC, see Using Add/Remove Programs (Windows Only) on page 197.
3. Manually delete the TIBCO ActiveMatrix BPM directories under *TIBCO_HOME*.
4. Manually delete the TIBCO ActiveMatrix BPM directories under *CONFIG_HOME*.

Using the Uninstaller

To use the uninstaller:

1. Log in to the system on which you want to uninstall software.
   - **On Windows**: log in as a user with Administrator privileges. You must have Administrator privileges to uninstall this software.
   - **On UNIX/Linux**: you should uninstall as the same user who did the installation. If more than one product installation has been made to the same environment and you want to uninstall them all, you should uninstall using the root user.
2. Do one of the following:

   On Windows:

   - Go to **Start > All Programs > TIBCO >** *env_name* and click on **Uninstall**. Alternately, you can navigate to the ***installation_environment*\tools\universal_installer** folder and run **TIBCOUniversalInstaller.exe**.

On UN IX/Linux:

— Navigate to the ***installation_environment*/tools/universal_installer** folder and run `./TIBCOUniversalInstaller-`*platform_id*`.`*extension*

You can choose to uninstall the product in either GUI or console mode. Uninstalling the product in the silent mode is not supported.

3. The TIBCO Installation Manager screen is displayed. Choose the option **Uninstall Products from Selected TIBCO Home Location** and then choose the location of TIBCO Home from the drop-down. Click **Next**.
4. The TIBCO Universal Uninstaller is launched and the **Welcome** screen is displayed. Click **Next**.
5. Select either **Custom Uninstall** (to select the products in this environment to be uninstalled) or **Typical Uninstall** to uninstall all products in this environment.

   If you selected **Typical Uninstall**, continue with step 7.

   If you selected **Custom Uninstall**, continue with the next step.
6. The **Product Uninstall Selection** screen is displayed.

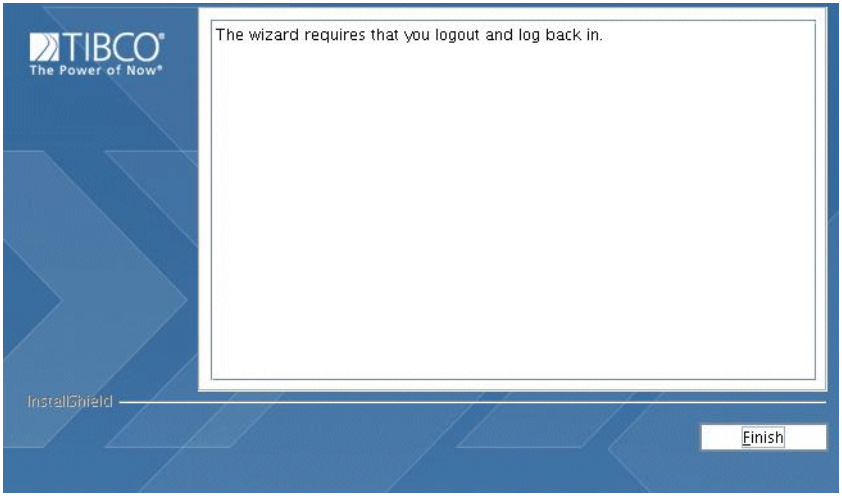
   Select the products (for example, TIBCO ActiveMatrix BPM 1.3.0) you want to uninstall and click **Next**.
7. The **Pre-Uninstall Summary** screen is displayed.

   If you want to change any of your choices, click **Back** to step back through the screens to the appropriate point. You can then restart the uninstallation process from that point.
8. When you are satisfied with your choices, click **Uninstall**.

   The uninstaller removes the software product you specified.
9. The Running ANT Tasks screen is displayed while the selected components are uninstalled. When prompted for the clean up of the /tools directory, click **Yes, clean it up**.
10. The Post Uninstall Summary is displayed. Review the information and then click **Finish**. The uninstaller exits and cleans up any temporary files.

The TIBCO ActiveMatrix BPM entries in the Start menus may appear after the uninstallation. To correct this log out, then log in again.

- (UNIX/Linux only) - If an error message similar to the following is displayed after uninstallation, log out and log in again for the uninstaller changes to take effect:



Using Add/Remove Programs (Windows Only)

To remove the installation using the **Add/Remove Programs** option on your PC:

1. Log in to Windows as a user with system administrator privileges. You must have system administrator privileges to uninstall this software.
2. In the **Control Panel**, double-click the **Add or Remove Programs**.
3. In the **Add/Remove Programs** dialog, select **TIBCO Universal Installer (*installation_environment_n*)**, where ***installation_environment_n*** is the directory corresponding to the installation environment you want to uninstall. If you have installed more than one TIBCO product, there will be multiple entries in **Add/Remove programs** (for example, **TIBCO Universal Installer_1 (c:\tibco\env_1), TIBCO Universal Installer_2 (c:\tibco\env_2)**, and so on).
4. Click **Change/Remove**.

   The uninstaller launches. Follow the uninstallation steps in Using the Uninstaller on page 194.

Appendix A Creating a Clustered Environment With SSL

You can use the silent mode to create a clustered ActiveMatrix BPM environment configured with SSL, including a replicated ActiveMatrix Administrator. The following sections describe the tasks to be performed for the same:

1. Create the BPM server on Machine1, including the ActiveMatrix Administrator Server.
2. Create the replicated ActiveMatrix Administrator Server on Machine2.
3. Create the BPMNode on Machine2 by running the commands on Machine1.
4. Distribute the BPM applications to the BPMNode on Machine2.

Task A Create the BPM Server and ActiveMatrix Administrator Server on Machine 1

1. Run TIBCO Configuration Tool on Machine 1 and select "Create TIBCO ActiveMatrix BPM Server - V1.3"
2. Go through the configuration and set all necessary SSL keystores and override the BPM Configuration folder. See Chapter 5, Creating and Configuring Runtime Objects for details.
3. Save the configuration, but do not run **Configure**. The files are stored under *CONFIG_HOME*`/tct/bpm`.
4. In the *CONFIG_HOME*`/tct/bpm/`*date-time*`/scripts` directory, edit the file `integration_create_admin_data.xml` as follows:
   a. Set the `sharedWorkFolder` attribute of the `AdminConfigFolders` element to a folder in the shared file system.
   b. Set the `location` attribute of the `SCMDetails` element to the same value as `sharedWorkFolder` attribute.
   c. Set value of the `Svar` element named `ArtifactServerInternalSharedLocationSvar` to the same value as `sharedWorkFolder` attribute.
   d. Save the file.
5. Run the BPM configure using the BPM **silentinstall** utility command:

```
./silentinstall bpm
/opt/amx-bpm/config_dir/tibco/data/tct/bpm/2011-04-07-20-59-20/
scripts
```

Task B Create a Replicated ActiveMatrix Administrator Server on Machine2

1. Copy the contents of *CONFIG_HOME*/tct/bpm directory from Machine1 to Machine2.
2. On Machine2 edit the appropriate files as described in Replicating a TIBCO ActiveMatrix Administrator Server on page 162, starting from step 10. Amend the files to include Machine2 name, SystemHost replica and SystemNode replica.
3. Configure the replicated ActiveMatrix Administrator server on Machine 2 using the BPM silentinstall admin utility:

```
./silentinstall admin
/opt/amx-bpm/config_dir/tibco/data/tct/bpm/2011-04-07-20-59-20/
scripts
```

This silent install utility command installs the ActiveMatrix Administrator only (does not install the BPM server).

Task C Create BPMNode on Machine 2 by running commands on Machine1

1. Transfer / copy the contents of the CONFIG_HOME/bpm directory from Machine1 to Machine2.
2. Run the TCT on Machine1 and select "Configure TIBCO ActiveMatrix BPM Server Node Type - V1.3".
3. Save the configuration but do not run Configure. The files are stored under CONFIG_HOME/tct/bpmnodetype.
4. Edit the file bpm-nodetype.properties to:
   - replace "tibco.admin.ssl.truststore" with "javax.net.ssl.trustStore"
   - replace "tibco.admin.ssl.truststoretype" with "javax.net.ssl.trustStoreType"
   - replace "tibco.admin.ssl.truststorepassword" with "javax.net.ssl.trustStorePassword"

   The new property names are case sensitive - ensure that the correct name and case are used.
5. Configure the second BPMNode on machine 2 using the BPM silent install utility: silentinstall bpmnodetype

```
./silentinstall bpmnodetype
/opt/amx-bpm/config_dir/tibco/data/tct/bpmnodetype/2011-04-08-00-1
8-03/scripts
```

Task D Distribute BPM Applications to Machine 2

Using TIBCO Administrator on machine 1, redistribute the following TIBCO ActiveMatrix BPM applications to the new node.

- **amx.bpm.app**
- any TIBCO ActiveMatrix BPM LDAP Authenticator applications. For example, if you are using the internal LDAP server provided with TIBCO ActiveMatrix BPM, these would be:

  —amx.bpm.auth.system

  —amx.bpm.auth.easyas

1. Select **Applications**. From the **Environment** drop-down list, select the Environment name that you specified on machine 1. The default is **BPMEnvironment** for example.
2. Select the TIBCO ActiveMatrix BPM application and click **Distribution**.
3. From **Available Nodes**, the new node is now listed. Depending on which node you are configuring, select

- **BPM Node** and drag NodeB from **Available Nodes** to **Selected Nodes**.
- **WorkManager** and drag **NodeC** from **Available Nodes** to **Selected Nodes**.

4. Click **Save**.
5. Click **Refresh**. The TIBCO ActiveMatrix BPM application is displayed as **Out of Sync**. Click **Deploy** to redeploy theTIBCO ActiveMatrix BPM application.
6. Click **Refresh**. The TIBCO ActiveMatrix BPM application is displayed as **In Sync**.
7. The Oracle database driver must be provisioned using the Third Party Driver wizard in TCT. On Machine 2 the appropriate files under BPM_HOME must be amended:

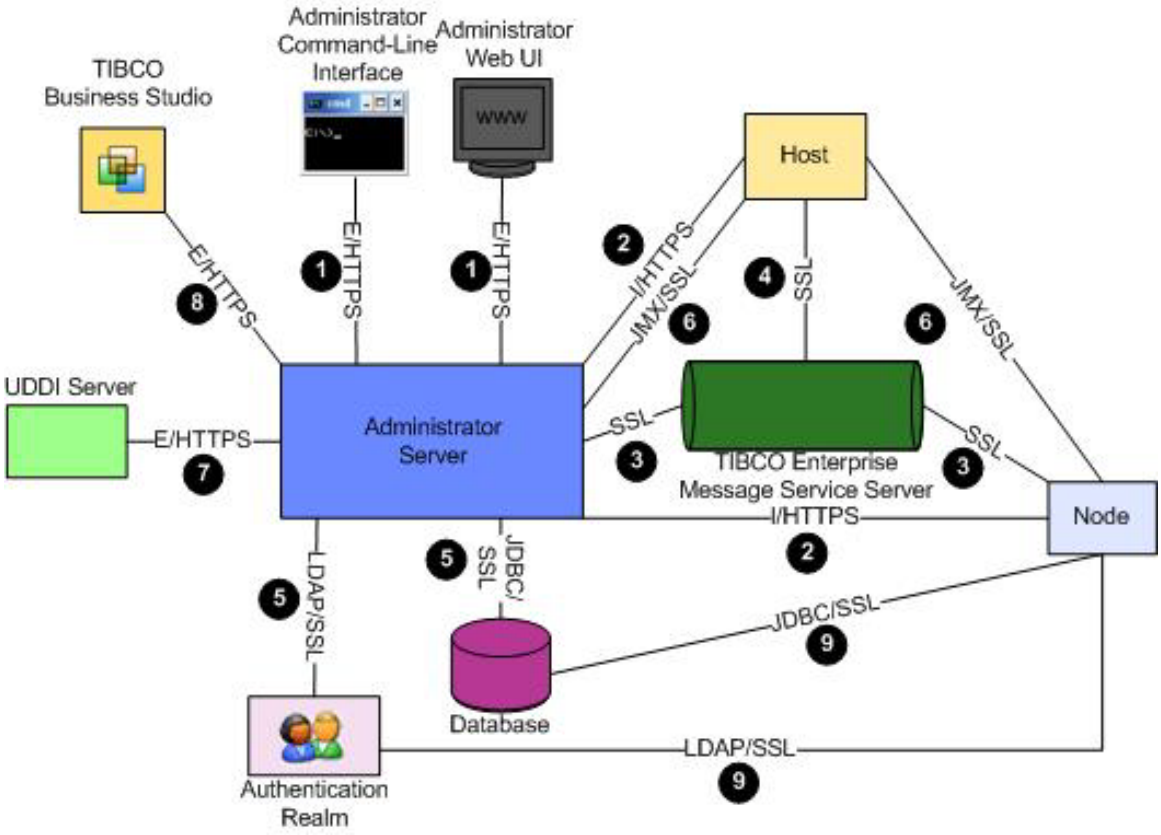
   ```
   BPM_HOME/administrator/3.1/scripts/instance-mgmt.xml
   BPM_HOME/administrator/3.1/scripts/governance/governance_integration_build.xml
   ```

Repeat these steps for every TIBCO ActiveMatrix BPM application that needs to be redistributed to the new node.

Appendix B Securing Communication Channels

The TIBCO ActiveMatrix BPM platform is partitioned across many components. These components communicate with each other and with third-party applications over various communication protocols. The components and communication channels are illustrated in Figure 2 on page 203.

Figure 2 TIBCO ActiveMatrix Communication Channels



By default, these communication channels are not secure. However, they can be secured by configuring the channels to use the Secure Sockets Layer (SSL) protocol. SSL is a cryptographic protocol that provides security and data integrity for communications over TCP/IP networks. SSL encrypts the segments of point-to-point connections at the Transport Layer.

An SSL client and server negotiate a stateful connection by using a handshaking procedure. During this handshake, the client and server agree on various parameters to establish the connection's security. The handshake begins when a client connects to an SSL-enabled server requesting a secure connection. The server sends back its identification in the form of a digital certificate. The certificate usually contains the server name, the trusted certificate authority (CA), and the server's public encryption key.

You can specify the SSL configuration of the communication channels at various times in the life cycle of a TIBCO ActiveMatrix BPM enterprise. Table 62 on page 204 lists how to perform the initial SSL configuration and how to upgrade, downgrade, and change the configuration of each channel. Detailed steps for each procedure are provided in Chapter 5, Creating and Configuring Runtime Objects, on page 92 and *TIBCO ActiveMatrix Administration* guide.

Table 62 SSL Configuration Summary

Key	Channel	Initial Configuration	Upgrade, Downgrade or Change Configuration
1	TIBCO ActiveMatrix Administrator server (external HTTP port) - web and CLI clients	When creating ActiveMatrix Administrator server in TIBCO Configuration Tool.	Upgrade or downgrade: ActiveMatrix Administrator CLI Change SSL configuration: ActiveMatrix Administrator CLI
2	TIBCO ActiveMatrix Administrator server (internal HTTP port) - hosts and nodes	When creating ActiveMatrix Administrator server in TIBCO Configuration Tool.	Upgrade or downgrade: ActiveMatrix Administrator web UI or CLI Change SSL configuration: ActiveMatrix Administrator web UI or CLI
3	TIBCO ActiveMatrix Administrator server - TIBCO Enterprise Message Service server	When creating ActiveMatrix Administrator server in TIBCO Configuration Tool.	Upgrade or downgrade: ActiveMatrix Administrator web UI or CLI Change SSL configuration: ActiveMatrix Administrator web UI or CLI
4	TIBCO Host instance - TIBCO Enterprise Message Service server	When creating ActiveMatrix Administrator server or TIBCO Host instance in TIBCO Configuration Tool.	Upgrade or downgrade: ActiveMatrix Administrator CLI Change SSL configuration: ActiveMatrix Administrator CLI

Table 62 SSL Configuration Summary (Cont'd)

Key	Channel	Initial Configuration	Upgrade, Downgrade or Change Configuration
5	TIBCO ActiveMatrix Administrator server - external database and LDAP servers	When creating ActiveMatrix Administrator server in TIBCO Configuration Tool.	Change SSL configuration: ActiveMatrix Administrator CLI
6	TIBCO ActiveMatrix Administrator server - hosts and nodes (management)	When creating ActiveMatrix Administrator server in TIBCO Configuration Tool.	Upgrade: ActiveMatrix Administrator web UI Change SSL configuration: ActiveMatrix Administrator CLI
7	TIBCO ActiveMatrix Administrator server -UDDI server	1. Manually import the UDDI server certificate into the ActiveMatrix Administrator server trust store using keytool. 2. Enable secure communication in ActiveMatrix Administrator web UI or CLI.	Same procedure as initial configuration
8	TIBCO ActiveMatrix Administrator server (external HTTP port) - TIBCO Business Studio	ActiveMatrix Administrator - When creating ActiveMatrix Administrator server in TIBCO Configuration Tool. TIBCO Business Studio - When you connect to ActiveMatrix Administrator.	ActiveMatrix Administrator Upgrade or downgrade: ActiveMatrix Administrator CLI Change SSL configuration: ActiveMatrix Administrator CLI
9	Resource instances (JMS, SMTP, LDAP, JDBC, HTTP) - external servers	ActiveMatrix Administrator web UI or CLI	ActiveMatrix Administrator web UI or CLI

Appendix C TIBCO Enterprise Message Service Server Configuration Required for Non-Admin Users

This section describes the configuration changes that are required if your TIBCO ActiveMatrix BPM infrastructure connects to its TIBCO Enterprise Message Service servers with users that do not have administrator privileges. It presents the most restrictive permissions necessary.

1. Set permissions for the Administrator servers.

   In the following commands, replace *username* and *password* with the username and password values appropriate for each bus.

- Messaging Bus

```
delete queue >
delete topic >
create user username "Description of the user" password=password
create queue AMX_SV.>
grant queue AMX_SV.> user=username create, delete, modify, send,
receive
```

- Notification Bus, propagates status messages between Administrator, hosts, and nodes

```
delete queue >
delete topic >
create user username "Description of the user" password=password
create topic EMSGMS.>
grant topic EMSGMS.> user username create, modify, subscribe,
publish
grant topic $sys.monitor.connection.* user=<username> subscribe
grant admin user=username view-connection
```

- Management Bus, which handles the internal Administrator queues, currently grouped with the Notification Bus

```
delete queue >
delete topic >
create user username "Description of the user" password=password
create queue com.tibco.amf.admin.deploymentServerQueue.>
grant queue com.tibco.amf.admin.deploymentServerQueue.>
user=username create, delete, send, receive
```

- Common Logging and Payload Bus

```
delete queue >
```

```
   delete topic >
   create user username "Description of the user" password=password
   create queue cl_logservice_queue.physical
   create queue cl_payload_queue.physical
   grant queue cl_logservice_queue.physical user=username send,
receive
   grant queue cl_payload_queue.physical user=username send, receive
   create jndiname cl_logservice_queue queue
cl_logservice_queue.physical
   create jndiname cl_payload_queue queue
cl_payload_queue.physical
```

- Monitoring Bus

```
   delete queue >
   delete topic >
   create user username "Description of the user" password=password
   create queue amx.governance.stats
   grant queue amx.governance.stats user=username send, receive
```

2. However, the Notification, Management, and Messaging Buses are initially grouped together as are the Monitoring, Common Logging, and Payload Buses. As a result, their constraints need to be grouped before they are manually separated, if required.

- Messaging, Notification, and Management Buses

```
   delete queue >
   delete topic >
   create user username "Description of the user" password=password
   create queue AMX_SV.>
   grant queue AMX_SV.> user=username create, delete, modify, send,
receive
   create topic EMSGMS.>
   grant topic EMSGMS.> user=username create, modify, subscribe,
publish
   grant topic $sys.monitor.connection.* user=username subscribe
   grant admin user=username view-connection
   create queue com.tibco.amf.admin.deploymentServerQueue.>
   grant queue com.tibco.amf.admin.deploymentServerQueue.>
user=username create, delete, send, receive
```

- Monitoring, Common Logging, and Payload Buses

```
   delete queue >
   delete topic >
   create user username "Description of the user" password=password
   create queue cl_logservice_queue.physical
   create queue cl_payload_queue.physical
   create queue amx.governance.stats
   grant queue cl_logservice_queue.physical user=username send,
receive
   grant queue cl_payload_queue.physical user=username send, receive
   grant queue amx.governance.stats user=username send, receive
   create jndiname cl_logservice_queue queue
   cl_logservice_queue.physical
create jndiname cl_payload_queue queue cl_payload_queue.physical
```

3. Create the Administrator server and TIBCO Host instance using TIBCO Configuration Tool, see Chapter 5, Creating and Configuring Runtime Objects.

Appendix D Troubleshooting

When creating an instance of the ActiveMatrix Administrator server using TIBCO Configuration Tool and when using IBM DB2 as the external database server, the following errors are seen:

```
ERROR - Error while creating Admin CLI Keystore.
com.tibco.trinity.runtime.core.provider.identity.trust.TrustRuntim
eException: javax.security.auth.login.LoginException:
com.tibco.trinity.runtime.core.provider.credential.trinity.Trinity
RuntimeException:
com.tibco.trinity.server.credentialserver.exception.CAException:
java.io.IOException: java.lang.ClassNotFoundException:
com.ibm.db2.jcc.am.SqlSyntaxErrorException
```

These errors are caused when the required pagesize setting of 32KB is not configured for the IBM DB2 server instance.

To recover from this error:

1. Configure the pagesize setting for the IBM DB2 server instance.
2. Stop the `tibcohost` and `tibamx_SystemNode` processes.
3. Delete the folders *CONFIG_HOME*/`admin`/*EnterpriseName* and *CONFIG_HOME*/`tibcohost`/*EnterpriseName.*
4. Delete and then recreate the IBM DB2 database and tablespace.
5. Run TIBCO Configuration Tool to recreate an ActiveMatrix Administrator server instance.

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